

No. 6.

Dec., 1853.

Vol. 6.

# THE PLOUGH

THE LOOM AND THE ANVIL.


FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—  
NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILDINGS—OOT-  
TAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES,  
CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.

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# The Plough, the Loom, and the Anvil.

The *Plough, the Loom, and the Anvil*, is issued MONTHLY, and contains SIXTY-FOUR PAGES of closely printed matter, richly embellished with appropriate engravings, and will hereafter be published at the following

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Dec. 11

## IMPORTANT TO AGRICULTURISTS.

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# The Plough, the Loom, and the Anvil.

PART I.—VOL. VI.

DECEMBER, 1853.

No. 6.

## LABOR IN OBTAINING RAW MATERIALS, AND LABOR IN THE ARTS.

WE have often referred to the fact, that countries confined to the production of the raw material have never flourished like those where the arts and manufactures have been fostered. This diversity is not accidental nor temporary. It is founded on the nature of things.

The net profit of agricultural labor and of other labor in obtaining the raw material is far less than in the mechanic arts. The price for a good workman on a farm will not average over \$100 a year besides his board, and that board, on an average, costs less than \$75 a year. This makes the annual price of a farm laborer \$175.

The net profit of the proprietor who hires his labor at this low rate, seldom exceeds and often falls short of ten *per cent*. Learned discussions on this subject in agricultural meetings fully sustain the liberality, even, of this estimate.

The price of job-work in such departments, as a matter of course, must bear an almost exact ratio with the same labor employed on time.

On the other hand, the net profit of mechanical and manufacturing labor is comparatively high. A machinist values his time at \$2 to \$3, and even \$10 per day. No one of this class, of ordinary capacity in his calling, can be hired for a price essentially less than we have named. The reasons why it is so are obvious. They are numerous too, but with these we have now nothing to do. Facts are what we would examine, and not philosophy.

And which of these two classes will form the most profitable customers for those who live on exchanges—those described in our October number as being supported by the producers? Who can buy of our town and city merchants their flour, sugar, cottons, woollens, spices, sweetmeats, &c.? There can be but one answer.

Who furnishes the best custom to him who increases the value of the material he works upon, as the shoemaker, tailor, blacksmith, &c.? Evidently, the same class as before. Who are not limited in their numbers and success by the necessity of preserving to themselves the exclusive use of large tracts of land? Who can be collected into villages, towns, and cities, and thus furnish vastly increased facilities of trade? Whose liberal income enables them best to support themselves and their families from the surplus crops of the husbandman? Not the laborer who raises those crops, as we have just seen, nor the fellow-laborer who digs up the raw material.

The price of job-work, readily obtained in these trades and occupations, as in the class already mentioned, is conclusive on these points. And what does the artisan charge you for an hour's work on your watch? Seventy-five cents or a dollar, and often much more than that.

But look at the material on which he works. That piece of rude iron, which you carried in your hand from the foundry, might have cost you twenty-five cents. Let Messrs. Jessup and Co., or some brother artisan, carbonize that piece of iron, and its worth increases to four times its former value. Another artist converts it into main-springs and hair-springs, and its value is raised to hundreds of dollars.

You find a piece of brass on the highway, and sell it to the first man whom you meet, who will give you a shilling. An artisan uses it for making the brass-work of a dozen watches, and with the little bits of that piece of steel which were not used in the main-springs, &c., he completes the movements of several watches, each worth more than \$100.

A few ounces of this iron might have been converted into needles; and at sixpence a paper, what would be the value of those ounces, thus finished?

Do you reject these illustrations because we have valued them at retail prices? There we have you again. This same iron was bought at retail, though the purchase was of several pounds. Now it is retail, because it is sold in parcels weighing the fraction of an ounce. A purchase of a pound or two, or a few "gross," would become a "wholesale" trade.

Poor peasants, and entire classes of laborers whose pecuniary position is kindred to theirs, dig out and break up the white quartz, or collect the white sand, or collect the vegetable material from which potash is manufactured, at the lowest rate. The ultimate products of these labors are sold to the Bohemian glass-maker, and he reproduces them in the most elegant forms and colors seen in the Crystal Palace, either in New-York or in Hyde Park. He demands a price, too, corresponding with the changes made in their appearance.

A wool-grower sells his entire fleece at forty cents a pound, and "does better" in that trade than with his corn or potatoes. The manufacturer devotes less than an hour's work to a few pounds of it, and you buy back fine broadcloth at the rate of \$20 or \$30 per pound.

What form of labor in obtaining the raw material can be named, which pays in a ratio that compares with these?

It is not enough to say, in reply to all this, that such conversions of raw material into valuable goods require large "capital," and that without it, capital, these values could not be attained. We reverse the position, and say that not only does the labor of the artisan do what we have described, but it BRINGS INTO BEING EVERY DOLLAR OF THE CAPITAL WHICH IT EMPLOYS.

You hold in your hand a Leyden jar; touch the knob, and it does not affect a muscle. There is no activity in it. Turn that glass cylinder, yonder. "Well, I have done so; but see! nothing comes from it." Nothing did come from it. But apply the knob of the jar to that of the conductor of the cylinder, and bear upon that cushion while you turn, and the sparks are thick and bright. They are brought into being by these operations. So it was with this capital you talk about. The gold was in the mountain, and so was the lead, and the copper, and the tin, and the sulphur bubbled up from the spring. And there each might have lain or bubbled till the day of doom. What would have brought them forth? There might have been a few roughly-built ships to have carried corn and wheat and rice, and a very few other things, to some neighboring climate, and brought back fruits or roots that we were willing to pay for at such immense expense, (that is, if the ships could be found made to hand,) but there could be no other commerce. There are no silks, nor woollens, nor cottons, nor linens, nor other manufactures, of course, for if we had the material offering itself to our service, we have no

machinery. Without any of these *arts*, we have not even the stone axe of the Indian. Now, where's your "immense capital," your hundreds of millions employed as a basis for the industry of the civilized world?

We might go farther, and say that without "the arts" there could not be even civilization. But we now have to do only with the economical part of this subject.

But again, a very large proportion of ALL capital depends exclusively on the arts for its very existence. John Jacob Astor owned some scores of houses in New-York city. Annihilate the knowledge of the arts and the values they have produced, and what would those houses now be worth, even were the population to remain for the time being just what it now is? Just what houses accommodating an equal number of people in the remotest farming district would be worth, and no more.

But the people must be driven away from these crowded streets, and seek the unoccupied fields and forests, where there is some hope of appeasing their hunger; for in crowded cities they all must starve. There is not land enough in New-York city proper, without the aid of the arts, to support one family! Now, compute the value of ALL this real estate. It is LESS than that of a single house in the country, which has not a neighbor within twenty miles!

But suppose (an impossibility) that capital does exist, eagles and sovereigns and doubloons are piled and counted by hundreds of millions. What are they good for? Merely to pass as representatives of the value of sundry vegetable products. *They cannot produce the arts.* If they could, even with the aid of existing science and arts, there is many an ignorant man rolling in wealth, who would apply even all that he has, to acquire the knowledge of them. Our own ears have repeatedly heard from gouty occupants of stuffed chairs the emphatic utterance, "I would give all I am worth for your active muscles." Equally impracticable would it be for capital to create the arts.

On the other hand, it is the office of the arts to produce capital. It is their legitimate and necessary work. They have created that now in existence; not all, exclusively, but not a dollar has been created without their indirect aid.

There is a sense in which there is "capital" among the most degraded tribes. The land supports all animal life, and might support a few, without any knowledge of the arts, *technically* so called. The bow and arrow, the stone hatchet, the dressed skin, &c., with the spontaneous growths of tree and shrub and plant, might feed and clothe several of the millions scattered over the world's broad surface. But for how much could you then buy a hundred miles square of this goodly earth? The past proves that a few trinkets, no matter whether gold or pewter—for the value of each is the same—and a few baskets of shells and the like, would be quite ample.

There is, then, no mystery in the statement, and no doubt can be entertained of its correctness, that society progresses only where the arts are fostered; that the laborer on the farm is the best husband of his own estate who, increases his present possessions by multiplying the number and variety of laborers in other pursuits, in his own neighborhood. If artisans are driven to foreign lands, there to pursue their trades, while their places remain vacant at home, the farmer loses, with each emigrant, a portion of his capital. With each such departure, value disappears from his own title-deeds.

But there are much more influential considerations connected with this subject.

Suppose an ingenious mechanic should contrive a machine which could be placed close by the field of the agriculturist, which would take his corn



and grass and roots, and convert them by some speedy and sure process into almost any form or substance which the farmer should desire. He utters some "magic incantation," and *presto*, the wheat becomes broadcloth, the cabbage and the potato become linen and cotton goods, while the refuse is in exactly the right condition to fertilize the land and qualify it for new crops. Who would not pay an annual rent for such a marvel? But this is not all. Let this same machine, by changing one of the wheels, be competent to turn out the rye, oats, corn, fruits, &c., &c., in the form of quarter eagles or gold dollars, with now and then a small pile of genuine Washingtons. What an excitement would be raised! What wonderful results would be "sure to follow" such a discovery! But stop, reader; the whole array of artisans and manufacturers do this identical thing. And they do more: they pay a good share of your taxes, and of all the expenses of schools and of religious institutions. Without enlarging this list, the reader may now extend it, as he may judge the facts will warrant.

#### RUSSIAN INDUSTRY.

WE purposed to extend the leading article in our November number, with the information contained in the following paragraphs, but were accidentally prevented from so doing. Hence, we invite a second time the attention of the reader to this important subject. We are indebted for them to Bayard Taylor.

The *Bourgeoisie* forms the middle class in Russia, as in other civilized countries of Europe; that is, it stands between the nobility and the peasantry. Individually, they are styled citizen burghers, (*burg-ers*.)

Some of the requisitions here set forth seem arbitrary, and a few of them are so, but most of them conduce materially to the good order of the community. In fact, something like them exists in some of the New-England States. We have personally known an applicant, in Vermont, refused the "citizen's oath," which gives the right to vote, on the ground of immoral character. There is such a thing as being too lax as well as too strict; and we believe all our States deny the right of citizenship to convicted felons. We know not why many an unconvicted felon is not as undeserving as many declared felons, and we are sure that he is more dangerous to the community. So candidates for "naturalization" must be proved to be of good moral character.

The burghers of a city, town, or borough consist of—

1. Those born in it, or those who have settled there, established in any business, as tradesmen, artisans, &c.
2. Persons possessing houses, lots, or any description of real estate in the locality.
3. Those registered in one of the three guilds, or any other local corporation.
4. All those who, in the city where they live, have fulfilled duties of personal service, who are recorded in the general register, and have accordingly paid the communal taxes.

This body of citizen burghers is divided into—

1. The class of the corporation legally called merchants. All of them must be inscribed in one of the three guilds.
2. Respectable citizens.
3. Citizen burghers not inscribed in any of the guilds; artisans, mechanics, belonging to special handicraft corporations.
4. Freemen, such as discharged soldiers, emancipated serfs, and all others of free condition not belonging to any special corporation, but registered in the general one of the city inhabited by them.
5. Workmen, and all other inhabitants owning houses in cities, but not registered in the general or in any of the special corporations, can, if

they choose, be called citizen burghers, without, however, losing their privileges, if from the order of the nobility, or acquiring those of burghers, if still belonging to rural communes.

The three guilds or companies into which the merchant class is divided, are formed according to the amount of capital employed and declared by those wishing to get an inscription, on which an interest of about six per cent. is to be paid yearly into the treasury. The sum necessary for an inscription in the first guild is about \$20,000; for the third or lowest, about \$6,000.

Aside from this order of merchants, all other burghers form a general body, whatever their trade or occupation. A handicraft corporation is formed of masters, foremen, and apprentices. The members of such a corporation are either for life or temporary. To the first belong those born as citizen burghers; to the second, foreign artisans, free peasants, and serfs who have learned the special handicraft, or are received among the masters in the corporation, being thus inscribed for a certain time, without belonging to the general class of citizen burghers. The body of workmen is composed of all registered in the records of the town, and not belonging to any of the above-mentioned classes; of men unfit for the military service, or those having finished it; of foreign immigrants, artisans, or apprentices, but excluding those of bad character, and all those expelled for bad behavior, or for the non-payment of communal taxes, or the evading to fulfil personal duties.

Any one enjoying the right to make a selection of a corporation, trade, or occupation for life, can enter the class of citizen burghers, abandoning thus his inferior position, and passing over to this superior one. For this he must be legally and officially accepted by the community which he wishes to join. Exceptions exist for some artisans, where the legal assent of the community to the act of admission is not necessary. Thus, cloth-weavers, dyers and dressers, and machinists, can join a general city corporation or community, without obtaining the formality of its assent.

Free or crown peasants can join the corporation of burghers individually or with their families, and so can rural communes, if they are traders, mechanics, artisans, or manufacturers, but not as agriculturists. Individuals passing thus from one state to another, must obtain the assent of the commune which they abandon, as well as the acceptance of that which they enter. When this is to be done by a whole rural community, the permission of the Government is necessary. Widows and daughters of free peasants can, under certain conditions, become incorporated among the citizen burghers.

Independent agriculturists, (a kind of free yeomen,) as well as emancipated serfs, can join a city corporation with its assent.

Jews, and seceders from the State, or orthodox Greco-Russian Church, can only join corporations in transcaucasian cities. Asiatic nomads, of all races and kinds, Kirguses, &c., can, at their choice, enter any city corporation whatever, and no objection can be raised to this by the commune.

The members of a municipal commune can hold legal meetings for the debating and settling of objects of general interest, necessity, and utility. These meetings are either general, formed collectively by all the various members of the general city corporation, or special, for each special corporation; as, for example, for merchants, burghers, or workmen, a general meeting is held every three years, being called together by the Governor of the county, and presided over by the Mayor, who is called *gotowa* or head. The legal age for the exercise of the right of voting is 25 years. At such triennial meetings, the community elects members for its internal administration,

as the Mayor, the Common Council, called *Duma*, the magistracy or Board of Aldermen, a special Board for affairs relating to artisans, a Board to superintend the recruiting of soldiers, and a Board of Deputies to look over the administrative accounts. The community of any city can also erect a communal bank according to the prescriptions of special laws.

No citizen burgher can be deprived of his standing or special privileges otherwise than by the verdict of a criminal tribunal. In all civil as well as criminal matters, if both the parties are of the same class, the case comes first before the Board of Magistrates.

Merchants of the first guild, or their children, when the parents have belonged for 25 years uninterruptedly to the guild, have the right to enter the civil or military service under the same conditions as the children of personal nobles. Merchants of the second guild, or their children, cannot enter the civil service at all, and the military only as volunteers, that is, with the right to leave it again at any time. All other merchants, citizen burghers, or their children, are not admitted into the civil service on any condition whatever, and when they enter the military, do not enjoy any privilege whatever, but are treated like all the common recruits. A citizen burgher registered in one of the three guilds is free from the general recruiting to which all other burghers are subject. He also does not pay to the State the capitation tax, called *poduschnoe*, (from the soul,) as he already pays an interest on the capital for which he is inscribed in the guild. All other commercial taxes are paid by the burghers in common with the rest of the inhabitants. Any citizen burgher can own houses or other real estate situated in cities or villages, or lots of naked land, that is, land without serfs. Citizen burghers not inscribed in any guild, but owning houses in cities valued above \$5,000, are obliged to register their names at least in the third guild, and pay the interest on their capital. Such houses can be owned by widows or unmarried daughters of the class of merchants, but on condition of registration in a guild. Merchants can belong to and be registered in rural communities according to certain prescriptions of the law.

If a merchant, or in general any citizen burgher, inherits landed estates with serfs on them, the serfs are to be sold immediately to the crown domains at the average price of from \$150 to \$200 the soul—the right of owning serfs being reserved exclusively to the nobility. The citizen burghers can be deprived of their property only by the judgment of a civil tribunal.

No citizen burgher registered in the general, or in any of the special corporations, can step out of it, and abandon the city where he is incorporated, by settling in another, without the assent of the community or the permission of the Government. Any citizen burgher can pass into the close corporation of the merchants, on declaring the amount of capital required to be inscribed in one of the three guilds, and paying to the treasury the interest thereon.

Each community can exclude any member under criminal condemnation, or of notorious bad character. The city of Moscow has alone the privilege of giving up such individuals to the Government, either as recruits, to be reckoned as furnished in any future levy, or for the colonization of Siberia. Children of such convicts, above fourteen years of age, have the option either to follow the father or to remain in the community. Minors not having a mother, never follow the parent when sent to Siberia.

Above all the subdivisions of the bourgeoisie, and thus above the close corporation of the merchants, even those of the first guild, rises the legal privilege of the respectable citizen, *postchotnoi grazdanin*. This is a privilege



either enjoyed for life or hereditary. Children of personal nobles become hereditary respectable citizens.

One who, in virtue of the social position of his father as a merchant of the first guild, or as a savant, a physician, &c., has acquired the right to complete a course of studies in one of the universities of the Empire, can petition the Government to be included in the class of respectable citizens, on producing testimonials of having finished the higher studies, and of good conduct during his stay at the university. The same is conceded to artists when they produce testimonials from the National Academies of Art; to children of merchants of the first and second guilds, who have passed with special distinction through the studies of the universities; to pupils of special commercial schools; to artists who are foreigners by birth, &c.

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#### COTTON TREE.

A WRITER in the *Flag of our Union*, Jackson, Miss., gives the following account of the cotton tree growing in Navigator's Island, and of the island in general:

"The tree was about 30 feet high, its body about a foot in diameter, and the breadth of spreading of the limbs making a very bushy top of perhaps 30 feet in diameter: the bolls before bursting are very much the shape of the cotton bolls raised in the United States, but probably near the size of a goose egg. In *each* boll there are *three* of the pieces I here enclose. When the cotton is in bloom, my friend informs me it presents a most magnificent appearance, and seems as if it was a mammoth *snow-ball tree*, seen in the gardens in the United States. The staple of fibre of the cotton seems to me to be of good length; whether it is of that silky fineness desirable in such an article, I cannot pretend to judge, my residence having for more than a quarter of a century been in the State of Missouri, and yet I have spent many winters down South; and it occurs to me that it might by possibility be of some use to the people of the South to have some of the seed with the cotton attached. The tree on the island grows wild and luxuriantly; perhaps the seed might produce a shrub in Mississippi of some value, and if so, I shall be pleased to have been the medium of introducing it. If it should be thought, on inspection of the samples sent, that it was desirable to be better informed concerning it, or if more seed is desired, my being resident here will enable me to gratify any wish of that kind, as there is likely to be not only a constant but increasing trade between this port and Australia, and the Navigator's Island is almost on the direct route, and if not already, will soon be made a general calling-place between the two places. From here to the Sandwich Islands—nearly a direct calling-place—is one third, and the Navigator is another third of the distance between here and Australia. These islands, nine or ten in number, of pretty good size, and many smaller, are exceedingly valuable, and lie in about 14 deg. south latitude, and longitude about 171° west of Greenwich, and belong to no nation—have a sort of patriarchal government by chiefs of different grades, mostly maintaining separate organizations, and are often at war. They are not *cannibals*.

These islands are going to be of great importance, as they lie on the route between the two great gold continents, and it does seem to me (although a stubborn Whig, dyed in the wool) that they ought not to fall into the hands

of any European nation. They probably contain 100,000 inhabitants; and yet if one or two hundred discreet, just men were there, and join in, in some of their wars, with the better sort or class, a government might easily be established there, after the fashion of the Sandwich Islands. These islands have some good harbors, and at present furnish a pecuniary prospect for a few energetic capitalists, that would pay enormously. The inhabitants live almost entirely on the fruits and vegetables that grow wild and spontaneously. The climate is not colder than 75 degrees, nor hotter than 81 or 82 degrees; and as to health, no country on earth more so."

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FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

#### NOTES FROM THE FAR WEST.

THE Western farmer may truly be said to be a go-ahead man. Nothing daunted by the want of those accommodations which the Eastern States offer, his ingenuity and tact are never at a loss to supply these deficiencies. If his harness breaks, he has the tools at hand for the necessary repairs. A set of carpenter's implements is almost essential to the agriculturist in those parts of the far West.

The great scarcity of hands, and the demand for the use of mechanics and other handicrafts, makes it very desirable that a new settler should be a *jack-of-all-trades*. And really, no one is aware how soon new duties and employments become not only practicable but easy when necessity calls for their accomplishment.

We are now having most delightful weather, although the mornings and evenings are cold and frosty. The first frost this fall was rather earlier than usual, namely, on the 10th of September. It stopped the further growth of much of the late-sown corn, but most of that planted early was too far advanced to be much injured. I see here the great importance of putting the seed into the ground as early as possible in the spring, that it may escape these early frosts. Buckwheat especially needs early attention.

Every kind of harvest has been saved here, corn excepted; and as around us there are but few barns, you see the crop put up in round stacks, or what are often called Irish mows; and the country around, being dotted with these signals of plenty, affords a picturesque and pleasing sight. But they remain for a short time only, as all the threshing is done by machinery, generally driven by eight horses, and thus it makes short work of a farmer's crop. The wheat produce is heavy and good just around me, most of it being summer wheat. Winter grain does not succeed well.

We have two railroads progressing on each side of us, which will be greatly prized by the agriculturist.

Horses and all other live stock are dear, particularly sheep, which, if at all good, bring two dollars per head; but this evil will eventually correct itself, as every farmer is raising and increasing his cattle as fast as possible. Pro-vender being so plentiful here, it is not difficult to winter almost any quantity of cattle; and as hands are difficult to obtain, this branch of farming is more easily attended to, and, in the end, is the most profitable.

To an Eastern man, the method of farming here appears very careless and wasteful. Corn is husked from the stalk as it stands, and the cattle are turned into the whole piece to eat what they choose, and tread down the rest,

which is burned or ploughed under in the following spring. Most of the grain is threshed out in the open fields, and the greater part of the straw is left to rot, or sometimes it is set fire to, to get rid of it.

Cattle are apt to commit depredations, as but few farms are well fenced, particularly swine, which never ought to run loose, as fencing against them is impossible. Nor is there any thing gained by it, as a hog kept up eats less than when at large, and gains more flesh.

The Indian summer, which I have witnessed in Canada, is here unknown, although the weather in this month and in a part of the next is often calm and lovely; and if the winter commences somewhat early, the quickness of vegetation in spring makes up for it. Potatoes which I planted in June, I dug for the table just two months after. An early sort, brought from Jersey, thrive well, as also some corn; but the latter, I think, is rather too tender for this climate. Pumpkins here attain an immense size. One that I measured reached 51 inches in circumference; ruta bagas, 26; and carrots nearly one foot.

The seeds of the catalpa, the alanthus, and the locust trees, which I planted in the middle of June, vegetated luxuriantly. Some of the plants have reached upwards of three feet in height. These ornamental trees are a great desideratum, as we have none of these kinds in our woods; nor do I observe any evergreens in my neighborhood, although I hope to obtain some next spring, and set an example to my fellow-agriculturists to ornament their dwellings.

The locust tree has been planted here to form a hedge, as a fence. I hope to try some next spring, as also the Osage orange; for, as we have no chestnut timber, and wood is not always plentiful on our prairies, the sooner some substitute for fencing is provided, the better.

The opinion here is that peach trees will not succeed, but I think it is a wrong impression. I have a few in my garden, six or seven years old, and these are luxuriant and healthy, and bear fruit. Several young trees which I set out thrive well. I think, with a little protection in winter, with straw over their roots, they would not be injured. The fact is, these trees shoot too luxuriantly in summer, and have a great quantity of young and tender wood, which is not proof against the severity of the winter, and thus they need a closer pruning here than in the more Eastern States.

Our county fair, which was recently held at Janesville, did us credit. The ploughing-matches were entered into with spirit, and the show of cattle, fruit, farming implements, &c., &c., was by no means behind that of other Western States. These exhibitions are of great use, and stimulate the community in laudable efforts to improve their agricultural skill.

AGRICOLA.

October.

#### FARMERS IN PUBLIC PLACES.

THE press has been burdened of late years with lectures and sermons and satires, addressed to agriculturists, reprobating the fact that, on public occasions, as cattle-shows, &c., when speeches are to be made, they fall into the rear, and speak only by proxy. Facts are as stated. We have a word to say as to their propriety.

We remember that Lord Mansfield is reported to have said that he should be as much ashamed to know statute law as not to know common law. The reason is obvious. Statutes are constantly changing, and not one in a hundred is ever called to the notice of a lawyer. Hence, to study them



so as thoroughly to understand them in all their relations, would be time thrown away, and labor without profit.

It is so, in our opinion, with the entire catalogue of working-men. If any one has the "gift" of public speaking without study, or experience, or science, we know not why he may not *show it up*. For the sake of the bar and the pulpit, and for their clients' and hearers' sake, we wish this faculty did "come by nature." But we are persuaded that it is not thus that men are eloquent, or persuasive, or instructive. Such qualities are only the result of much reading, of careful and close study, and no little experience. Hence, if farmers do make speeches, the presumption is, that the result will be about as happy as if a lawyer were to undertake some of the most difficult and intricate of farmer's work, or a clergyman were to undertake to play mechanic.

True, we have some lawyers and some doctors, and some men of leisure, who enrol themselves on the list of farmers. Some are educated at college, or other equally useful institutions, so as to make them conversant with language and with science; and thus, and *thus only*, are competent to acquit themselves handsomely in public speaking.

But not one half the lawyers, nor one half the ministers, nor one half the doctors, can make a good speech at a dinner-table, or at a public anniversary. Our Benevolent Societies, annually meeting in New-York and Boston, are obliged to use over their old stock, and that, too, several times within our own recollection, and even then fail to sustain the interest with which they first began. This is a matter of notoriety. Under such circumstances, to laugh at farmers for not exposing themselves as volunteer bores, is far from being judicious or in good taste.

The farmer who toils all day, and at night makes plans for to-morrow, how can he be expected to become a good and acceptable speaker? If he has acquired the art before he becomes a farmer, or the mechanic before he becomes a working mechanic, it is all well. We wish many, *a multitude*, might thus qualify themselves before they commence these arduous pursuits.

Besides, our farmers are proverbially modest men. Different causes conspire to make them so. We should regret a change, and nothing would so thoroughly effect this change as frequent public debate. We have known a few absolutely ruined by this very process. They "outgrew their shoes." They substantially outgrew their dresses and their entire habits, and, like some of old, did nothing but hear or *tell* some new, and yet thrice told story.

We commend these considerations to our agricultural friends, and to the press. It is not necessary to be a good public speaker in order to be a MAN. At the same time, some of our most fluent "orators" are, and are regarded as, very small men, while those who are always speaking in public are always laughed at. Of this, the last, we never knew an exception.

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#### RED CLOVER AT THE SOUTH.

It is a mooted question whether the crop of red clover is suited for the South. The following is a very satisfactory statement on the subject, by Mr. Croom, of Greensboro, Ala., in the *Soil of the South*:

MESSRS. EDITORS:—I very cheerfully comply with the request communicated in your polite letter of the 27th ult., in sending you some of the results of my experiments with red clover, animated with the hope which has been awakened by your suggestion, that it will subserve a very large public interest.

I came to Alabama in the spring of 1837, well indoctrinated in the calcareous theories and experiments of Edmund Ruffin, Esq., the great Nestor of an improved Southern agriculture. With such information it was not to be wondered at that, so soon as I became acquainted with the lime lands of Green and Marengo counties, the conviction should be forced upon me, that they were well adapted to the growth of red clover. It was not long before I made some experiments which removed every possible doubt. As, however, my cleared land was all fresh and highly fertile, and the woodland was covered with a luxuriant growth of cane, covering even the summits level between the water-courses, there was no demand for clover either for pasturage or improvement. This state of things continued for some seven years, when the disappearance of the cane created a necessity for looking out for some substitute for feeding stock. In clover I have found that substitute.

I have used this grass for grazing, more or less, for the last eight or ten years, gradually increasing its cultivation as there was a demand for it. And I may add, that I have become more and more pleased, I might more properly have said, enthused its advantages every hour. I esteem it far more valuable here than in a Northern climate, for two reasons: one is, that it does not require as frequent resowing; the other, that it furnishes good grazing during the winter and early spring months. These are important advantages.

My clover lots are as luxuriant the eighth and ninth years, as during the second and third. They are a little scant too when the first growth dies out in June, and during some short spells of very rigorous weather in mid-winter; at other times they furnish a liberal supply for continued grazing of the richest kind. My engagements on the plantation do not permit me to mow any for hay, which I might however do, if there was a necessity for it. There is no difficulty in saving seed by pulling off the heads from a few acres, and putting them away in that form for future use; about three bushels of these heads, well rubbed between the hands and sowed like oats, will secure a good stand on an acre of land. As clover is a biennial plant, it is necessary to have the seed renewed in the standing lots every second year. This is done by the seeds which annually and semi-annually drop—the matured heads which escape the cattle and hogs.

In the article communicated last January to the *Southern Cultivator*, I mentioned the amount of grazing derived from a five-acre lot of red clover; I will now detail to you as nearly as I can what has been done by a twenty-five-acre lot of seven or eight years in clover:

Early last spring, my overseer put on it about one hundred and fifty fattening hogs, some beef cattle, and my brood mares and colts, and some old horses, &c. Now, I believe he will attest, that during all that time to the present moment, they have all kept fat without any other food but corn enough to the hogs to keep them gentle and obedient to the call. I believe he will further say, that in June, when the clover matured, half of it or more dried upon the ground, enough for a good dry carpet. I have sometimes believed that it would not be extravagant to say, that an acre of my clover furnished more stock food than would be supplied by 100 bushels of corn; there can be no hazard in saying, half that quantity.

I have not yet satisfactorily tested its benefit to the soil, which, however, can scarcely be called a matter of experiment. I sowed, last fall, a lot which had been in clover some eight years, in wheat, and many pronounced it while growing the finest wheat in the country; but from thick seeding, very wet weather, or some other cause, the yield was an ordinary one.

In speaking of the grazing of the twenty-five acre lot, I forgot to say there

was no rain on it from the 20th of March to the 1st of July. It should be also stated that it has afforded abundant grazing to the present time. It sprung up again very soon after maturing, and owing to the irregularity of its maturity and renovation, there is moderate grazing even during June. I asked my manager a few weeks ago, about the middle of August, whether his fattening hogs required much corn; he told me he only had a little given to keep them gentle, and they often refused to eat it, they were so full.

I have had some fifty or more head of horses and mules on other clover lots, since my crop was finished, which lots were sown last February.

I will next say a few words as to the mode and time of sowing, the quantity per acre, and the lands adapted to its growth.

The land should be deeply ploughed, well pulverized, and then six quarts of clean seed or three bushels of the rubbed heads sown to the acre, then covered with a harrow or brush, and well rolled.

I prefer February to any other time for sowing, so soon as the danger of hard freezes is past. The air and ground are then warm and moist, and it readily comes up and grows off rapidly.

It should be sown on open land, and alone, if in the spring. It may do to sow it with wheat in the fall, but if sown with oats, it is kept back until oats are removed, when its sudden exposure to the hot sun is apt to destroy it. Clover delights in sunshine when it has taken root, and when it has with the sun sufficient moisture. Its deep tap-root—and especially is it so in lime land—enables it to bear drought far better than most other grasses.

The chief elements of this plant being lime and sulphur, the soil for its successful growth must also contain a proper quantity of these minerals, furnished by nature or by art. As I have no experience in an artificial preparation of land for clover, I will not speak on this subject; but the experience of others authorizes me to say, that any one who has a good clay or loam soil can, by the proper use of lime, gypsum, and guano, succeed with clover.

Thus, my dear Sir, have I, *currente calamo*, imperfectly complied with your request, by giving you an inkling of my experience and views regarding red clover. If there be any omission or defect which I can supply, most cheerfully will I do it upon your suggestion. If it shall aid you or the great cause you are so commendably engaged in advancing, it will be to me a source of heartfelt pleasure, and a rich compensation for the small trouble it has cost me.

Yours very truly,

H. CROOM.

Greensboro, Ala., Sept. 6th, 1853.

#### CARE OF SHEEP.

MR. S. A. JEWITT, who has great experience in every thing connected with animals, writes as follows:

*Docking Animals.*—In cutting the tail of a sheep, you will find three arteries, two upon the upper side, close to the bone of the tail, and one near the centre of the tail, on the under side; this one is much the largest, and the one out of which most of the blood flows when cut asunder.

It is perfectly safe, as to loss of blood, if you tie up the large artery before cutting the tail. First slit down the skin lengthwise, about an inch. The artery, if in a lamb, will be seen about the size of a common knitting-needle. Draw a thread of waxed linen or silk under the artery, with the common straight needle, or one a little crooked at the point is better. Tie up tight before you cut off the tail, which you will sever just below the knot. This is all done very easily, and with but very little loss of blood. You may sprinkle a little dust or pulverized alum on the wound to advantage.



FOR THE PLOUGH, THE LOOM, AND THE ANVIL,

## NATIONAL HORSE EXHIBITION,

WITH A DESCRIPTION OF THE PASS OF THE GREEN MOUNTAINS.

FROM Pittsfield, the Western Railroad runs easterly about three miles across the beautiful valley of the upper Housatonic. Now, the 19th of October, the meadows of this valley are exuberant in all the verdure of summer, and as beautiful herds are grazing upon them as ever graced an agricultural fair. From the eastern limit of this valley commences the heaviest grade between Albany and the *Summit*, and two miles brings us to Dalton, renowned for its paper-mills, its beautiful meadows, and on the north, its lofty and heavily-timbered mountains. From this station to Hinsdale, three miles, the ascent is more gradual, though the traveller still finds himself "rising in the world" at an unusual rate. This town, once considered a mountain town, has of late participated much in the enterprise and prosperity of the age, and may well boast of its fertile meadows, watered by the young Housatonic, as well as for its manufacturing establishments and its flourishing academy. The rock here is gneiss; the soil on the surface is apparently composed of drift, or a sand formed by a detrition of the rocks, and in some places brought together into hillocks, as though the surface had been subject to the action of floods. Five miles further brought us to Washington, famous for the deep cut in the solid rock, which attracts the attention of every traveller, and where the grade descends easterly and follows the waters of the Westfield river, crossing them at frequent intervals, until some twenty or more bridges are passed, and all the way through a narrow defile, frequently through walls of rock which nature erected, but through which man in his ambition forced a passage for the iron horse and the stately chariots he propels; then by high mountains, deep chasms, with occasionally an outlet to some unseen region, formed by a tributary of the noisy, beautiful stream, which is your almost constant companion, until it fairly introduces you to the world-renowned valley of sweet waters, and for ever bids adieu to its mountain-home and myriads of cascades it had beautified, and grottoes to which it had given its cool refreshing influence as its waters lay in quiet slumber. The features of the country east of the mountain, until you reach Westfield, are not such as to warrant any high expectations of agricultural monopoly in those parts; yet, through all this defile, there is much to invite enterprise to bestow her energies, and will probably one day woo her to these mountain fastnesses, and reward her labors with wealth and prosperity. Already the manufacturer has drowned the music of the water-fall with the ominous music of spindle and the loom; and there are yet untold sites, where the waters may easily be induced to turn aside to give motion to machinery in varied forms and for many purposes.

The rocks that wall in our way, and frown with such indignity at the assault that man has made upon them, will one day yield their places, and be removed far hence to be wrought into the stately mansions of the rich; and so it will be seen that there are no by-places in all nature's realms, and no object of her creation, which cannot be adapted to the purposes of refined social life.

Springfield, our place of destination, the beautiful city of rural homes, the residence of wealth, talent, and enterprise, is *very pleasantly* situated on the

east bank of the Connecticut. Here the Western and Connecticut River railroads intersect each other, and thus make it a favorite centre of travel from all directions; and so great an amount of business is done on these roads, that there is scarcely an hour, by day or night, when the shrill voice of the whistle or the puffing of engines does not announce the arrival and departure of the cars. Immediately in front of the station-house, is the "*Massasoit House*," which, for its elegant accommodations and gentlemanly host, need not fear comparison with any hotel in New-England. Main, the principal business street, extends easterly from the depot of the several railroads, and is bounded by many buildings that would ornament an older city, or one of more aristocratic pretensions. About half a mile from the Massasoit, this street is intersected by State street crossing it at right angles, and by turning into State street on the left, you are soon brought up the hill to the beautiful well-kept grounds of the United States and the arsenal buildings, from the principal of which arises a high observatory, from which a view of the city and the Connecticut valley is obtained of a most charming and picturesque character. Beneath you is the city, nestled in quiet shades; on the south, the vision extends far into Connecticut; west, the Green Mountains, growing dwarfish as they extend southward, bound the horizon. Away in the north, are seen the highlands of Vermont and New-Hampshire; and east, the hill-country of Worcester. Directly contiguous to the grounds is *Government Square*, an area of about twenty acres, where was held the "*First National Exhibition of Horses*" that ever found a place in our history. The arrangement, as also the general features of the ground, were admirably adapted to the occasion to which they were devoted. Within the enclosure, and connected with the fence, were several hundred stalls fitted up for the safety and comfort of the animals exhibited. On the south, and in close proximity to the course-ground, were elevated seats, sufficient to accommodate four thousand spectators—an arrangement adapted to promote the comfort, and at the same time insure the comparative safety of all who were disposed to avail themselves of a sight in them, at the extremely low price of a shilling. This arrangement was a happy one, and we hope it will be adopted more generally at all our great gatherings. In front of these seats, and within the course-ground, a large platform was raised for the accommodation of committees, guests, &c., and in the centre of the ground was the large tent of John Wright, the well-known and highly acceptable caterer, whose provisions for the inner man, whether in kind or quality, are always ample; while, at a little distance, *Tremont House* hung out its broad banner and spread its sumptuous board to invite and regale the weary and hungry.

Circumstances did not permit us to reach Springfield until the evening of the 19th. Of course, we could not enjoy the luxury which the exhibition offered until the morning of the 20th. As related to us by a friend, the opening scene was of a brilliant and memorable character. A full description of it has gone before the world, and it will live in the minds of the many who witnessed it.

We were early on the grounds on Thursday morning, and the opening of the second day's exercises was announced by the ringing of a large bell, arranged for that purpose near the Committee's platform, followed by music of the Springfield brass band, stationed on the platform near by, and who were in constant attendance, frequently discoursing sweet music. The ground was early occupied by horses and horsemen prancing to and fro in every direction, some in pairs, some single, in buggies, gigs, or under the spur and lash of the rider. The first exercise in the programme was the exhibition of matched

horses, of which there were thirty-three entries. As they passed before the judges' stand, the numbers were announced by Colonel George Dwight, President of the Board of Managers, and the indefatigable Marshal of the exhibition. After passing in review, they were ordered to pass four times around the track, making a distance of two miles, that their travelling qualities might be developed, after which they were ordered to another locality, for further examination of the Committee.

At eleven o'clock A.M., the bell was rung to announce the hour for the exhibition of colts, which were divided into the following classes: First, stallions of three years, of which there were 17 entries; fillies of three years, 2 entries; stallions of two years, 8 entries; fillies of two years, 1 entry; stallions of one year, 7 entries. They were a fine lot of colts, and if we could believe that they were a fair specimen of colt-dom, we should suppose that none but first-rate horses would be seen after a few years. At twelve o'clock the bell announced the exhibition of *fancy* matched horses, and here was a feast for the eye to dwell upon. There were 17 entries in this class, and after the usual performance of passing in review, circling around the track, &c., they were drawn off to make room for the great display of the day—the exhibition of stallions, of four to seven years old, of which there were 33 entries from five States, and 3 from Canada. After passing in review before the Committee, they trotted twice around the course, presenting an agreeable and formidable display.

At three o'clock, came off the exhibition of geldings, of which there were 109 entries, and of course, many fine, very superior animals.

In the evening, a brilliant levee was given by George M. Atwater, Esq, who, as we are informed, was the originator of the exhibition, at his pleasant and tasteful residence, in Chestnut street, at which many distinguished strangers and citizens were in attendance. It was a highly interesting scene, for many of the statesmen and civilians of the land were there; it was interesting, because happiness and calm enjoyment were there, and manifested their presence in the many cheerful countenances speaking out the feelings of the soul within. Mr. Atwater has a soul as large as the universe, and if we may judge of the variety of viands on his table, he must have scoured the universe to secure materials for so diversified an entertainment. The brass band were in attendance to drive off dull care if he threatened intrusion. But no fear of that. The haggard monarch understood too well the enchantments of the scene to turn his footsteps that way. After relieving Mr. Atwater's table of its luxurious fruits and dainty bits, and themselves of many a timely joke, the company dispersed, each, no doubt, happier for the social pastime.

Friday morning, bright and beautiful weather. The hour of eight or time of opening the exhibition was announced by a salute of thirty-one guns, given by a detachment from the armory, by four brass pieces brought upon the ground for that purpose. Then came the ringing of the bell, followed by music from the band. The seats were early filled to their utmost capacity, a great proportion of their occupants being ladies. They now formed an interesting feature of the exhibition, and a subject of universal admiration. From the variety of colors, they resembled at a distance an immense bouquet of beautiful flowers. No doubt, the thousands of husbands, lovers, &c., in attendance, will say our similitude is quite correct. Then came on a grand parade of all the horse-family on exhibition. They formed a complete circle on the course-ground, moving slowly at first, then more rapidly, until they exhibited the violence of commotion. During their march the band played,



which the horses seemed to understand as expressly for them, and it was difficult to decide which exhibited the most pride and self-complacency, the horses or their owners.

Next came off the exhibition of ponies, of which there were 21 entries; then of thorough-bred horses, of which there were seven entries, and among which was Lady Digby, owned by James Turner, of Boston, sired by imported horse Trustee. She went twice around the course, a mile, in two minutes and two seconds. Jenny Lind was in this class, but not to exhibit her vocal powers. Then, as a finale, came the exhibition of stallions, of seven years old and upward, numbering 56. It was a grand and formidable display, and as it passed away, we passed off too, for the clouds were portentous of a coming storm.

The entries, as we were informed, were as follows:

1. Draught horses in spans, 4 entries; 3 from Massachusetts and 1 from New-York. Single team, 1 from Connecticut.
2. Breeding mares, 48 entries; of which 26 were from Massachusetts, 5 from Connecticut, 11 from Vermont, 3 from New-Hampshire, 2 from New-York, 1 from Rhode Island.
3. Mares with foals by their sides, 9 entries; of Massachusetts 4, from Vermont 1, Connecticut 2, New-Hampshire 1, New-York 1.
4. Matched horses, 33 entries; owned in Massachusetts 14, in Vermont 3, in New-Hampshire 2, in Connecticut 4, in Rhode-Island 1, in New-York 5, in New-Jersey 2, in Pennsylvania 1, withdrawn 1. Total, 33.
5. Colts, stallions, of 3 years old, entries, 17; from Massachusetts 5, from Vermont 5, from Connecticut 4, from New-Hampshire 1, from New-York 2. Total, 17. Fillies of 3 years old, 2 entries; of Massachusetts 1, of Vermont 1. Total, 2. Stallions of 2 years old, 8 entries; of Massachusetts 3, of Vermont 2, of New-York 2, of Louisiana 1. Total, 8. Fillies of 2 years old, of Massachusetts 1. Stallions of 1 year old, 7 entries; of Massachusetts 2, of Vermont 3, of New-York 2. Total, 7.
6. Fancy matched horses, 16 entries; owned in Massachusetts 7, in Vermont 3, in Connecticut 4, in New-York 1, in New-Jersey 1. Total, 17.
7. Stallions from 4 to 7 years old, 33 entries; owned in Massachusetts 9, in Connecticut 4, in Vermont 8, in New-York 6, in Canada 3, withdrawn 3. Total, 33.
8. Geldings, 109 entries; of Massachusetts 68, Vermont 8, New-Hampshire 1, Maine 2, Rhode-Island 2, Connecticut 13, New-York 9, Pennsylvania 1, Canada 1, withdrawn 3. Total, 109.
9. Ponies, 21 entries; of Massachusetts 7, from Vermont 2, from New-York 2, from Connecticut 4, from Canada 1, from New-Hampshire 1, withdrawn 4. Total, 21.
10. Thorough-breds, 7 entries; of which of Massachusetts 3, from Vermont 1, from New-York 1, from Canada 2. Total, 7.
11. Stallions of 7 years old and upwards, 56 entries; of which were of Massachusetts 19, of Maine 6, of Vermont 5, of New-Hampshire 7, of Connecticut 6, of New-York 6, of New-Jersey 1, of Michigan 1, of Canada, 1, withdrawn 4. Total, 56.

The whole number of entries was 407, and were from the following States: Massachusetts, Vermont, New-Hampshire, Maine, Rhode-Island, Connecticut, New-York, New-Jersey, Pennsylvania, Louisiana, Michigan, and the Province of Canada East. So it will be seen, that if every State was not represented, the extremes of North and South were, and probably nearly every State *was* represented in men, the noblest growth of this realm.

Of horses, the Morgan family was most numerously represented, it being stated that there were 103 members of it present for a certainty, and we should not wonder if many more had claim to relationship. We are not quite certain, but this exhibition was got up by the family in accordance with modern usage to call all its members to the "old homestead," to repeat their histories and prove consanguinity.\* Be that as it may, they are a noble race of animals, and worthy to inherit more of the land than they now possess. The Blackhaws stood next on the list of numbers. May the race of each be multiplied.

The people of Springfield are certainly entitled to much credit for their perseverance in getting up this exhibition. Discouragements met them in the outset, sufficient to discourage ordinary minds. But the matter was in right hands, resting with those who having once taken hold of the plough in a good cause, do not look back. They have opened a deep furrow on the public mind, and sown goodly seed thereon, which will assuredly produce an abundant harvest, to the advantage and honor of the nation.

It is to be regretted that our nation, in its love of progress, has paid so little attention to the improvement of horses. But the day of delay in this matter is gone by.

And those noble-minded men, who originated and carried out the grand project, whose result has been so triumphant, what triumphant satisfaction, what honor is theirs! In this first conquest they have achieved a nobler victory than Alexander or Napoleon could ever boast. They have done their country a nobler service than a legion of ranting politicians can perform.

Yours truly,

W. BACON.

Richmond, October 27, 1853.

FOR THE PLOUGH, LOOM, AND ANVIL.

#### FAIR OF THE MARYLAND INSTITUTE.

MESSRS. EDITORS:—The annual fair of the Maryland Institute closed its session, of three weeks, on the evening of the 31st ultimo.

I doubt not you will deem the doings of this Society of sufficient importance to claim a small space in the columns of your valuable journal. I shall attempt to notice but few of the many objects of interest which I saw.

The first Maryland Institute was formed in 1825, and incorporated, by the Legislature, in 1826. It continued in successful operation, diffusing valuable information through the whole community, and, more particularly, among the mechanics and laborers, for whose special benefit it was instituted, till 1835, when, in the burning of the Athenæum building, the library, apparatus, and other valuables of the Institute, were destroyed, and the Society disbanded.

The former Institute, no less than the latter, owed much of its efficiency and usefulness, if not its existence even, to the intelligence, zeal, and untiring industry of JNO. H. B. LATROBE, Esq., a name, which will be fondly cherished so long and so far as the influence of these literary associations shall be felt.

After the lapse of twelve years, in 1847, the first movement was made for

\* It is stated in the *Springfield Republican*, that in 1798, Mr. Justice Morgan, of that town, took a three years' old colt to Randolph, in Vermont, and it is supposed that from this colt the valuable race of Morgan horses originated, a fact which ought to be chronicled for the benefit of all admirers of the horse.

the formation of a new society, or the resuscitation of the old one. On the 22d of December, a Committee previously appointed, submitted a report, embracing the form of a constitution, which was adopted; and the Institute was duly organized, by the choice of officers on the 12th of January following. The first exhibition, or fair, was held in October, 1848. The gross receipts for admission to the fair amounted to \$3,163. The receipts, from the fair of 1850, were \$5,604. The number of members was then 610, and the number of depositors 951. These numbers have been gradually increasing at each successive fair.

In 1850, the Institute was incorporated, under the title of "Maryland Institute for the Promotion of the Mechanic Arts." Its sixth fair has just closed. Its success thus far, and its prospects of influence and usefulness, for the future, must meet the expectations of its most sanguine friends.

The hall of the Institute is worthy of notice. As a specimen of architecture, it ranks among the first in our country, which certainly has not much to boast of in that line. The ground occupied is 60 feet front, and 355 feet deep. Underneath the hall, is an arcade, having 70 pilasters, with archways, leading to the market-stalls, by which it is occupied. This basement has a 20 feet ceiling, supported by 100 cast-iron columns. A more beautiful, spacious, and commodious market-house probably cannot be found in the United States.

The hall of the Institute is entered by a broad stairway, from Baltimore street. The hall has a 32-feet ceiling, and is 250 feet by 55. It has 20 windows, each  $17\frac{1}{2}$  feet by 7; a gallery extending quite around, 7 feet wide on the sides, and 10 at each end, elevated 14 feet above the floor, and supported by brackets attached to the walls. The fresco painting upon the ceiling and walls is much admired. It is said that two thousand persons may stand upon the floor of the promenade galleries, and six thousand more upon the main floor of the hall, and that four thousand may be seated.

These estimates evidently contemplate a jam. The capacity of the hall is very great. Its form, however, is such as to make it more suitable for balls and institute fairs, than for public lectures or deliberative assemblies. When lighted up, as it was each evening of the fair, by 132 gas burners, and viewed from either extremity of the gallery, it was "a sight to behold." The whole area, above and below, was filled with happy faces, which seemed to be illumined by the brilliancy of the occasion and move in time to the band, which was discoursing sweet music; and, at the same time, inspecting the works of art, with which the *rest* of the hall is filled. It was a practical and material illustration of the remark, "Distance lends enchantment to the view." It came well-nigh a realization of my childhood's vision of the palace of Aladdin.

The members of the Institute are divided into four classes.

1. Members over 21 years of age, who pay an initiation fee of \$2, and an annual assessment of \$3.
2. Junior members, minors over 14, who pay one half of the above.
3. Life-members, who become such by paying \$25.
4. Honorary members.

Connected with the Institute is a "school of design," in which, for four months in each year, instruction is given by a professor of the art, to such members as choose to be taught.

Also, a library and reading-room, which is accessible to all the members.

Also, a mineralogical cabinet and laboratory of philosophical and chemical apparatus.

Also, a chemical department, which is not yet in operation; and once



each year a fair is held, the design of which is to foster genius, develop artistic skill, and promote the cause of popular education. The fair is also depended upon, mainly, to defray the current expenses of the Institute.

I have left but little space for the recent fair, about which I might "write a book." But as this is an age of fairs and palaces, and most persons, especially those so intelligent as the readers of the "*Plough*," have visited these shows, and know what is usually exhibited there, I shall not particularize. Suffice to say, the exhibition was worthy of the Society and the great city of Baltimore.

I noticed this difference between the fair of the Institute and the fairs which I have visited in New-York and New-England. In the latter, the useful greatly predominates; in the former, the ornamental.

A steam-engine, manufactured by Messrs. Poole & Hunt, of this city, a perfect model of its kind, was in operation in the hall every evening during the fair. To this, were attached various machines, some of Maryland, and others of northern origin. Of flouring-mills, I noticed several models. In one of Major Downing's letters, it is said of General Jackson, that he designed so to simplify the Government, that he could take it into a one-horse wagon and carry it all over the United States. Experimenters in flouring-mills seem to have a similar object in view. Many of these models are portable, requiring from two to four horse-power, and occupying no more room than an old-fashioned clock-case.

I noticed an improvement upon Page's saw-mill. The name of the patentees, I did not obtain. The improvement consists in placing the log *underneath* the saw. By this arrangement, the saw cuts *with* the grain, and not *against* it, consequently, requiring much less power, leaving the board comparatively smooth, needing but one turn of the log before completion, whereas Page's requires three.

There was a Yankee notion, in the form of a wooden-bowl machine. It turned out its ware so rapidly that, if supplied with timber, the whole nation might soon be able to take a hasty *bowl* of soup.

There was also a machine for making plug tobacco. Were I to try my hand at invention in that department, I should wish to incorporate the principle of annihilation.

But I have not time to enumerate. In the agricultural department, there were some good specimens, but they were few in number.

In wearing-apparel, both for men and women, there was a fine display.

Most kinds of furnishing-goods, cabinet-ware, surgical and dental implements, perfumery, pickles, preserves, and hams were in great abundance, and of superior quality.

In needlework, plain and ornamental, the display was truly imposing. There were also good specimens of daguerreotypes, crayon drawings, and oil paintings. Pianos also, and stoves and furnaces, of excellent finish. Cedar ware also, made by Horace Magne, of this city, which cannot be surpassed in the United States. There were also stoves and other useful articles, made of soap-stone, by the Maryland Soap-stone Company, whose factory is in this city. This Company furnish more stone, and for most purposes of better quality, than is obtained from any other quarry in the States.

Among the curiosities was a live Yankee, who styled himself the "New-England Card-Writer," and wrote Baltimore thus: Otimore. Also a curious clock. Besides keeping time, it runs eight days, strikes the quarters, on four bells, of different tone, gives an alarm to waken the master, lights his lamp, lights a fire in the stove, rings the servant's bell, until she rises, and closes

her curtains to dress. J. C. Morrill, of this city, is the inventor and manufacturer.

During the progress of the fair, an address was delivered before the Institute, by Judge Cushing, which was very well received. His subject was the Progress of the Mechanic Arts. An allusion to the labors of the Jesuits, in Christianizing the natives of this country, reminded the audience that the speaker, in becoming attorney, had not sunk the politician.

The closing address, by the President, Mr. Vassant, recently elected to Congress, from this city, was chaste and appropriate.

For most of the facts I have been able to communicate, I am indebted to the politeness of Mr. Selby, the actuary of the Institute.

Yours, &c.,

R. B. H.

Baltimore, November 4th, 1853.

#### FRANKLIN COUNTY (O.) AGRICULTURAL SOCIETY FAIR.]

THIS enterprising Society had a very gratifying exhibition. This is not surprising, when we notice that the officers are full of zeal and of enterprise, and that their list of premiums is large and liberal. It is through the influence of some of these gentlemen that the State Society have increased the number of their premiums in the *farm* department. The Franklin County Society awarded more than two hundred premiums. The President writes us a very gratifying statement of the influence of the Society. He says :

"Our people have learned that good stock pays best. They have yet to learn that it will pay to cultivate their lands in the best manner. When this is accomplished, the Agricultural Society will have fulfilled their destiny."

In one respect besides, they have, in our judgment, set a good example to their sister Societies, to wit, in awarding nearly forty volumes of our journal as premiums to the successful competitors. We commend the habit as a good one. This, indeed, is not the only instance of the kind, nor this the only season, in which similar awards have been made, but, so far as we recollect, this is the most numerous of our lists of this description.

We give a full account of the farm of Mr. Samuel Brush, who received the first premium on farms, and say to all his fellows, "go and do likewise."

"Farm No. 2.—Samuel Brush. This farm is bounded on the north by the Ohio Central Railroad; east, by Big Walnut Creek; south, by the Columbus and Granville Plank-road; and west, by a county-road. The farm contains 60 acres of improved land, about 60 acres in wood, all enclosed. The improvement consists of 30 acres of bottom land, divided into two fields of about 15 acres each, one in corn and the other in pasture; about 25 acres of upland divided into two fields, 10 acres of meadow and 15 acres lately in oats, potatoes, orcharding, avenues, &c. The unimproved is nearly all underbrushed, and the down timber cleared up, and is intended to be sown in blue grass for pasture; the residue, about 5 acres of side-hill, is used as a stock-yard. We find no waste land on the farm, as the side-hill is used for a stock-yard in lieu of the level land that can be cultivated. This farm was purchased four years since, and at that time had 12 acres of cleared land, 7 of which was on the bottom, and 5 on the upland. The residue, 48 acres, has been cleared since. When purchased by the present owner, it was covered with ponds of standing water, which presented an unwelcome appearance, and prevented the raising of crops remunerative to the tiller. By a

judicious system of drainage, ditching, and subsoiling, the quantity of crops has not only been nearly doubled, but the farm presented an attractive and beautiful appearance.

We examined the corn field, and suppose it would average from 70 to 75 bushels per acre, and if the stumps on the part newly cleared were removed, would make 100 bushels. The pasture land, being newly cleared, could not be profitably cultivated, and upon inquiry, we ascertain that it is as profitable as the cultivated land. There are 125 young apple trees of the best variety, in a thrifty, healthy condition; about 25 cherry trees, and from 50 to 100 ornamental trees, including three kinds of evergreens, which will soon add much to the value and beauty of the farm. On the east side, next to the creek, which in periods of great floods, occurring once in about 15 years, overflows the bottom land, Mr. Brush has constructed a levee or bank from 16 to 20 feet wide at the bottom, 2 feet wide at the top, and  $5\frac{1}{2}$  feet high. On the top of this is a board fence, about 3 feet high. On each side of the fence is planted the Osage orange for a hedge, to enclose, and become a substitute for the board fence. Half way down the bank on each side is planted another row of the orange; the outer row next to the creek is intended to grow up as trees, to protect the bank against drift-wood, &c. The levee is sown in blue grass. This levee is three quarters of a mile in length, extending from the bank of the plank-road to the bank at the railroad. We understand this embankment cost at the rate of \$2.70 per rod of  $16\frac{1}{2}$  feet. At first, this levee and fence seemed to us an expensive concern; but when we inquired and found, first, that there was a ditch inside, caused by excavation, to make the levee worth at a low estimate 60c. a rod; 2d, the permanency of the levee and hedge, making an everlasting fence; and 3d, the necessity to keep out the creek, and the saving of labor and timber in fences that would be liable to be carried away by high water, we came to the conclusion that in a permanent view this levee and fence was the most economical and profitable expenditure on the farm. The buildings are log, consisting of a dwelling, stable, &c.; also a very superior stone milk-house, which we pronounce perfect. It is built below a spring, with a projecting roof to cover the spring on the hill-side. The water is raised in the spring by a stone wall, laid in water-lime, and carried through an iron grate into a stone trough into the building, and out through another grate. We understand that Mr. Brush intends carrying the water to the foot of the hill for the use of stock. We find the farm remarkably clear and clean of weeds, and in good order and condition for so new a farm. The arrangement of the fields is admirable, dividing the different qualities of land, and an abundant quantity of spring water can be had in each. Mr. Brush's stock is thrifty, and we find that he adopts the plan of a judicious change of pasturage, so much neglected by farmers generally in this part of the country: by this system his pastures are always fresh, and yield an abundance of feed. Being fully aware that mismanagement or a want of knowledge has always been the cause of our farmers not reaping that rich reward which their labor and industry so well merit, we have thus gone into a more detailed account of the system of drainage, &c., adopted on this farm, well satisfied that a reasonable outlay judiciously applied in drainage, will make our low lands the most valuable and productive in the country.

We cannot refrain from giving it as our opinion that Mr. Brush is a scientific farmer; and we are satisfied that his farm is well cultivated and well managed, and as profitable as it could possibly be made, for the short time he has owned it."



FOR THE PLOUGH, LOOM, AND ANVIL.

## FAIR OF THE MARYLAND AGRICULTURAL SOCIETY.

THE annual cattle-show and fair of the Maryland Agricultural Society was held, during the last week, near this city. Having spent a part of one day in the enclosure, I will give you the result of my observations.

The ground occupied by the Society is a plat containing, I should judge, about twenty-five acres, situated one mile from the Washington Monument.

This field is enclosed on three sides by sheds, or stalls, substantially constructed and neatly whitewashed. These stalls are numbered, and so varied in form as to be adapted to the different kinds of stock. On the remaining side is a high, tight fence, which entirely excludes outsiders from a view of the wonders within.

Near the centre of the lot are a number of buildings, occupied by offices, and the exhibitors of agricultural and mechanical implements.

An admission fee of twenty-five cents was exacted of all non-contributors. The amount thus received is reported to be *four thousand dollars*.

This is to me a novel feature in the management of cattle-shows. In the New-England States, this farmer's festival is as free as the light of the sun and the dews of heaven. Reasons, however, exist for adopting a different course here. The Society receives no aid from the State. Her resources are wholly inadequate to defray the expenses of the annual fair. Then, the expenses incurred are much greater. The fixtures are more permanent and costly. The ground, being near the city, and being entirely devoted to the interests of the Society, is subject to ground-rent. The amount paid in premiums is much greater than by the County Societies of New-England. *Thirty-five hundred dollars* was distributed by this Society last week.

Furthermore, there are multitudes in a great city like this, who know nothing about agriculture, and care as little. These persons will attend the cattle-show to gratify an idle curiosity or have a row. It seems proper that they should be made to pay for their entertainment.

Near the centre of the enclosure is a *stadium* or *hippodrome*, where the horses are shown up. It is about an eighth of a mile in circumference. The track is covered with tan-bark, and the whole is surrounded with a railing, to keep back spectators.

Near by is the plat devoted to ploughing-matches. The ploughing I did not witness, but the land gave no evidence of having been *well* ploughed. To the ploughing was added a *harrowing-match*. This is a good idea. There needs good ploughing *and* good harrowing to secure a good crop.

But I must to the show. First, of *horses*. The number exhibited was not large, but there were some very fine specimens. Farmers in this State, especially in the eastern portion, have heretofore paid but very little attention to the raising of horses. Better horses, either for draught or for the road, I have never seen, than may be found in Baltimore. But most of them were raised in Virginia or Ohio.

*Neat Stock*.—Of this there was a large collection, though not a great variety. Of working oxen, or steers, I did not see a single pair, though I was told that some had been exhibited. Of bulls, milch cows, and heifers, there was a large number, and some choice specimens.

Of varieties, I noticed the Durham, the Devonshire, the Ayrshire, the Alderney, and the native. Of each there were fine specimens. For the stall, the Durhams, I opine, deservedly rank highest; for the dairy, the

Ayrshires; for beauty and hardihood, the Devons; and for all three combined, the natives, as we Marylanders say, "can't be beat."

A better show of *sheep*, I have never witnessed. Bakewells, Southdowns, and Merinoes were among the best. Why may not Maryland compete successfully with Vermont in wool-growing?

In this climate, the sheep need never to be housed. The expense of keeping cannot be more than one half as much as in New-England. The wool may not be quite as good, but the mutton must be better.

I was happily disappointed in the appearance of the *swine*. There were the Berkshire, the Suffolk, the Chester county, and the native breeds. The Berkshires are preferred by many, on account of their hams. With a Marylander, the ham is by far the most important part of the hog. Let that be right, neither too fat nor too lean, and they care little about the "middlings." The Suffolk breed has been but recently introduced. They were much admired by the farmers, and sold at a very high price. The Chester stock is from Chester county, Pa. They grow very large, are coarse and ill-shapen, the body being disproportionately long; and the flesh must, I think, be coarse. Of the native breeds, there were some good specimens, and many, that had better been permitted to grub on at home. But what interested me most in this department, was a pen of fifty-one hogs, belonging to a gentleman by the name of Nelson, of Virginia. These grunTERS were all of nearly the same size, weighing, it was estimated, when dressed, little if any less than four hundred pounds each. They were but sixteen months old. In the eye of a farmer, it was a rare spectacle. I was told by the tender, they had never had any meal; their food being unbroken corn and water.

The show of *POULTRY* was *tall*. I had supposed that the great "hen convention," held in Boston, some two years since, could not be beaten. But this exhibition was certainly not inferior to that, either in number and variety or quality.

The Celestial Empire was fully represented by "Imperials," "Chittagongs," and "Shanghai." Egypt, Italy, and Spain were also there. Poland too, though long since dismembered, and known only as among the things that were, was represented. The stately "Dorking," the pert little "Bantam," exhibiting more of the *suaviter in modo* than of the *fortiter in re*, the sombre-looking "Jersey Blues" and the modest, but no less useful natives, were all there. Also geese, ducks, turkeys, peacocks, Guinea-hens, doves, and lop-eared *rabbits* were permitted to speak for themselves. "Tom Hyer," too, was among the crowd. Not the New-York pugilist, of unenviable notoriety, but a feathered biped of good reputation, which, in consequence of his contempt of the *higher* law of love to all, has been dubbed "Tom Higher." How infinitely more excusable and more worthy of respect is a game-cock—a fighting chicken—than an animal having the form and lineaments of a man, who takes delight in that which demons would blush to own themselves guilty of! How humiliating the reflection that man, created in the image of his Maker, should become so degraded as to contend with game-cocks and bull-dogs!

Of *agricultural implements* there was a great display. There was a large collection of ploughs of every conceivable variety. A favorite plough with Pennsylvania farmers, made entirely of wrought iron, and turning the furrow to the left, was there. There were deep-tillers, side-hill ploughs, and shovel-ploughs. The latter are in general use in this State. In the cultivation of corn, also in covering seed, they are very serviceable.

I did not notice the Michigan plough, and think it has not been introduced.

There were many good specimens, but upon the whole, I think the ploughs much inferior to those manufactured and used farther north. Good ploughs, however, are being introduced, and the more intelligent farmers are learning to appreciate them.

Of machines for mowing, reaping, threshing, cleaning, grinding, making brick, pressing hay, sowing wheat, planting corn and other seeds, sawing wood, cutting hay and vegetables, and shelling corn, there was a great variety. Most of the articles in this department were manufactured in this city, and are as perfect in their kind as can be obtained.

Among the many things and animals which I saw to admire, was one which I was sorry to find there. At a cattle-show we look for brute animals, and are glad to see them; but, I deem it not a fit place for that which makes brutes of men.

The address, by Mr. Holcomb, of Delaware, was highly laudatory of the agriculture of the States, and especially of the Middle States. The speaker gave a very interesting and graphic description of the agriculture of Western Europe, which he had recently visited, and drew therefrom many valuable reflections for the instruction and encouragement of American farmers.

Suffice to say, this exhibition was highly creditable to the Society by which it was gotten up, and the State of Maryland; and proves most conclusively that agriculture is progressive here.

Yours, &c.,

R. B. H.

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#### TOPPING CORN.

HABIT, with most people, is law. Educate one to pursue a particular mode, and especially if all his neighbors do the same, through all the years of his boyhood and youth, and you have thereby placed him under bonds stronger than those of judicial tribunals, never to prefer any other mode to this.

This well-known fact has an important and perhaps controlling influence with many people in the treatment of their crops; and a large fraction of exceptional cases are of that other class, that would deserve to be called *fanatically scientific*, did not their fanaticism far outstrip their science. Every thing in the books, however absurd and contradictory, is honored as unimpeachable and unquestionable authority.

The proper treatment of ripening corn has received, and deserves to receive, most careful attention, and has called forth many zealous writers, some of them very able, in defence of their favorite theory. We do not add our own name to this list, with the expectation of discovering or of receiving any more consideration than many others. But there are a few unquestionable facts related to this subject, which must be allowed to deserve some attention in coming to a just conclusion upon it.

It is safe to say, in all cases, in the growth of plants, that nature never blunders. Not only each plant, in its natural condition, retains its own peculiar properties, but it has its own way of doing it, and that way is, for that plant, the best way, and the only safe way.

For example, we do not think it would be an improvement of the pine, and spruce, and hemlock, &c., to provide them with leaves like those of the oak or the grape. We might make a "better tree," but not a more *perfect*



*pine-tree*, by such a process. Such a change might introduce qualities which would adapt the pine to other uses than those to which it is now suited, and that is all. It might also destroy the tree.

Trace for a moment the physiological changes which such a change of leaves might produce. All perfect plants have an exact adaptation among their several parts. The root, the trunk, the leaves, &c., sustain very important relations to each other. Should the leaves perspire too freely, the sap, too concentrated and condensed, might be unable to circulate further. Of course, the tree would die. If too much water was absorbed, the sap would be too dilute, and the new wood might become soft and spongy. Thus, many trees, when deprived of their leaves, will die. They cannot recover themselves. Most plants can be killed with excessive watering, quite as effectually as by the severest drought. These illustrations are sufficient for our present purpose.

What point does Nature seek to accomplish in her operations, as the ultimate good? We do not hesitate to say, *the perfection of seed and fruit*. Flowers are often beautiful, though growing in a desert, and the odors of some surpass any power of art, though it have at command all the elements known to the chemist. But these and other points, we cannot doubt, are all incidental, the perpetuity of the species being the end in view.

Now, if nature does not act blindly in these matters, she knows when to order that leaves shall be *deciduous*, and when *persistent*, that is, when they shall shed themselves, and when remain perpetually green. Hence, to correct or improve nature in these matters, would seem a hazardous attempt.

But we nowhere have seen, in any species of plants, a habit of *shedding entire branches*, as a preparation for perfecting her fruit. That is a form of *deciduousness*, not yet discovered under nature's operations. Hence, for men to practice it, would not seem, *à priori*, to promise very happy results.

There is another class of operations, which seem kindred to these, but which are essentially diverse from them. These are instances in which we would secure an unnatural, or in some sense artificial, product. The culture of *celery*, for the table, is of this sort. We wish here to secure an unnatural tenderness of stalk, and hence we adopt artificial means. So with some of the edible roots; we cultivate, not for the fruit, but for the root, and *may* sometimes succeed at the cost of the most perfect fruit. Or again, we may prefer extraordinary size to other qualities, and then we nip off a portion of the young fruit. Fancies of various sorts lead us to adopt other artificial modes for securing our special object, in the cultivation of flowers.

In the cereals, however, the fruit is the object of the farmer's plans and labors, or in other words, the perfection of the seed. Here then he has the same end in view that nature has, and if he resorts to unnatural processes, he will ultimately discover his mistake.

But in raising corn, the farmer sometimes has a double purpose. He uses not only the fruit, but the leaf and the stalk. Hence, he has regard to both in his style of culture. To secure his stalks in their best condition, he must cut them before they begin to decay. But unless nature habitually blunders, this will be at the expense of the fruit. If cut at the moment when their vegetative functions cease, perhaps no loss is sustained.

"All this is very well," says one, "but facts are against you. The corn is, in fact, improved by cutting the stalks." Very well, only be sure of this, and we will admit that nature ALWAYS errs in this particular. Is any other inference possible?

If we and nature, both, are wrong on this point, we wonder why it was

not so ordered by a merciful Providence, that stalks of wheat, rye, &c., could be cut too, and thus these grains be improved? What splendid loaves would such improved wheat furnish! We cannot see why the cases are not analogous.

Unnatural tillage sometimes produces "monstrous" growths of stem, herb, or fruit, which require something equally unnatural to counteract it. This is not unfrequently seen in rich gardens, but we see no analogy between these phenomena and the case before us.

The corn may swell more or less, in a given case, the accidental result of circumstances, such as atmospheric moisture, condition of the stalks when cut, &c., but these, in our view, are only incidental, and do not materially affect the substance of the grain. Vegetation is at an end already.

#### COMPARATIVE VALUE OF DIFFERENT KINDS OF FIRE-WOOD.

To those who are in the habit of using wood as a principal article of fuel, a knowledge of the relative comparative value of the various kinds in market cannot be unimportant, particularly as the consumer is thus enabled to judge of the comparative difference in each, and consequently to select the *cheapest*, or that which is offered in market at the lowest price in proportion to its relative value. For this purpose we have compiled the following table, originally prepared from careful experiments, conducted on the most correct and strictly philosophical principles. It shows the weight of a cord of different kinds of wood, when dry, or *seasoned*, and the comparative value of the same, assuming as a standard the shell-back or white-heart hickory:

	lbs. in a cord.	Prop. value.	Comp. value.
1. Shell-back Hickory, -	4469	\$1 00	\$7 40
2. Common Walnut, -	4221	95	7 03
3. White Oak, - - -	3821	81	6 09
4. White Ash, - - -	3420	77	5 70
5. Swamp Whortleberry, -	3361	75	5 55
6. Shrub Oak, - - -	3337	74	5 47
7. Apple Tree, - - -	3115	70	5 18
8. Red Oak, - - - -	3083	69	5 11
9. Black Oak, - - -	3102	66	4 89
10. White Beech, - - -	2936	65	4 81
11. Black Birch, - - -	2815	63	4 67
12. Yellow Oak, - - -	2818	60	4 44
13. White Elm, - - -	2692	58	4 29
14. Maple, - - - -	2668	54	4 00
15. Buttonwood, - - -	2449	52	3 85
16. Spanish Oak, - - -	2391	51	3 77
17. White Birch, - - -	2369	48	3 56
18. Pitch Pine, - - -	1904	43	3 18
19. White Pine, - - -	1868	42	3 11
20. Lombardy Poplar, -	1774	40	2 96

Each cord of wood, when *green*, is estimated to contain 1443 lbs. of *water*. The farmer, then, who takes a cord of green wood to market has a load not much less for his team than his neighbor who should put on with his cord

of dry white oak, three quarters of a cord of seasoned pine, or make up his load of more than *two cords* of dry white birch. We have always considered the carting of *water* to market, especially over rough and heavy roads, an unwise and unprofitable business.

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#### SETTING FRUIT TREES.

IN regard to the time of setting fruit-trees, there is a difference of opinion. Some prefer the spring for this purpose, others the fall season. For those who neglected setting their trees last spring, the proper season to do it is any time from the falling of the leaves until the earth begins to be frozen. Dig the holes for the roots sufficiently large and deep, and put in a layer six inches deep of rich soil. Place the tree with its roots as nearly in its natural position as possible, the same depth as it originally stood upon this layer of soil, and keeping the trunk in an upright position, fill the hole with rich, well-pulverized earth, taking care that every root and fibre shall be firmly imbedded therein. After this earth has been firmly pressed or trodden in its place, throw up a small mound of gravel (to be removed in the spring) around the trunk, and place a few stones upon this, which will steady the tree, and prevent the too frequent freezing and thawing of the roots while the earth is loose. Instead of this, each tree may be kept steady by staking with two stakes, each being driven into the earth about two feet from the tree, sloping in opposite directions, crossing near the top on each side of the trunk, which should be surrounded by a bandage or cushion of moss, coarse wool or cloth, &c., and firmly bound between the stakes to its place. This will support a young tree better than any other method which we have seen tried

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#### WHAT HUMAN LABOR CAN DO.]

MR. STEPHENSON, the Engineer who designed and executed the famous Tubular Bridge over the Straits of Menai, said in a speech at Toronto :

"We ought not to forget that we have called to our aid that class of men called contractors, a number of scientific and mechanical men, many of them positively engineers. These contractors now come to the aid of the engineer in all difficulties ; so that the engineer has little more to do than to conceive, and they realize. One circumstance connected with this fact might be mentioned. In connection with the Tubular Bridge, there were nearly two millions of cubic feet of masonry required, yet without his concerning himself at all with the masonry, it was turned over to a thoroughly practical man, well acquainted with all the appliances which science had placed at his disposal, and so well were these appliances used, that in three years the two millions of cubic feet of masonry were brought from the quarry and put together, and raised into a magnificent edifice. The work amounted to this, that three cubic feet of masonry were set every minute for twelve hours in each day, for three hundred days in a year, and for a continuous period of three years. (Applause.) Nothing that I ever heard or read of equalled that ; yet I will almost pledge myself that more than that will be done at Montreal. (Tremendous applause.) He mentioned this circumstance in regard to the time in which so much work was performed by ingenuity in the application and use of tackle ; but they must not overlook the fact that other things are



brought to bear in other countries which nearly rival any thing that we can do as regards the amount of work done. A case of the kind came under our notice in Egypt: an embankment was to be constructed over the Delta of the Nile, extending over one hundred and forty miles, and in eighteen months the embankment, eight feet high, and twenty-five feet wide, was constructed, an operation which struck him as remarkable for the systematic application of human labor properly divided. There was one road from Cairo to Benau, thirty miles long, forty feet wide, and eight feet high, fitted for carriages, accomplished on this occasion. (Applause.) This was done, too, in what was called a barbarous country; but he has never seen it excelled in any country, however civilized! Therefore, it was well not to laud themselves too much in regard to their success in science; for there are parties, who, although not so far advanced in civilization as we are, have the means of promoting works speedily, as any to which we have attained."

#### MANURES, PEAT, AND MUCK.

DUNDONALD, in a work upon agriculture, published in 1795, says, "The most efficacious method of applying peat to poor, barren soils, is to mix it with the urine and dung of cattle; on failure of these articles, with alkaline and other salts, and lastly *with lime*."

In making a compost of peat with lime, Dundonald says, "This object is best attained by mixing newly-made and completely slacked lime, with about five or six times its weight of peat, which should be moderately humid, and not in too dry a state. \* \* \* This preparation of lime and peat is in a peculiar manner conducive to the growth of clover, and of the short, and as they are called, sweet kind of pasture grasses. The soil, also, by the application of it, acquires such a predisposition or tendency to promote the growth of such grasses, as to prevent its growing afterward rank, coarse, or sour herbage." "Notwithstanding," he says, "that this preparation of lime and peat is certainly, when properly made, a valuable manure, yet the advantages that may be derived from alkaline salts, instead of lime, are of much greater importance and general utility."

#### PROF. MAPES' MODE.

Professor Mapes practices another method of composting muck or peat. He says: "The chloride of lime and carbonate of soda is made by slacking three bushels of shell-lime, hot from the kiln, with one bushel of common salt dissolved in water. Common salt being composed of chlorine and soda, the lime combines with the chlorine, forming chloride of lime, which in turn receives carbonic acid from the atmosphere, and becomes carbonate of soda. The mass should be turned over every day for ten days, at the end of which time, it is ready for use. Four bushels of this mixture, thoroughly divided through one cord of muck, will decompose perfectly in ninety days in winter, and in a proportionately less time in summer. When this muck cannot readily be procured, any other organic matter will answer the same purpose; pond-scrapings, river-mud, decayed leaves, or even head-lands, with one twentieth its bulk of stable-manure, or weeds will answer well."

#### PROF. DANA'S METHOD.

Of a compost of peat with salt and lime, Prof. Dana thus speaks: "Take one bushel of salt, one cask of lime; slack the lime with the brine, made by

dissolving the salt in water, sufficient to make a stiff paste with the lime, which will be not quite sufficient to dissolve all the salt. Mix all the materials then well together, and let them remain together in a heap for ten days, and then be well mixed with three cords of peat; shovel well over for about six weeks, and it will be fit for use. Here then are produced three cords of manure for about the cost of \$2.10 per cord.

Salt,	-	-	-	\$0	60
Lime,	-	-	-	1	20
Peat,	-	-	-	4	50

3)\$6 30(\$2 10."

#### LORD MEADOWBANK'S METHOD.

This process has been the basis of most of the experiments in the use of peat or muck as a manure in this country, for the last twenty years. "Lay the cart-loads of it (peat or muck) in two rows, and of the dung in a row between them, the dung thus lies on the area of the compost dung-hill, and the rows of peat should be near enough each other, that workmen in making up the compost-heap be able to throw them together with the spade. In making up let the workmen begin at one end, and at the extremity of the row of dung, (which should not extend quite so far at that end as the rows of peat on each side of it do,) let them lay a bottom of peat, six inches deep, and fifteen feet wide, if the ground admits of it. Then throw forward, and lay about ten inches of dung above the bottom of the peat; then add from the side rows, about six inches of peat; then four or five of dung, and then six more of peat; then another thin layer of dung; and then cover it over with peat at the end where it was begun,—at the two sides and above. The compost should not be raised above four feet and four feet and a half high; otherwise it is apt to press too heavily on the under part, and check the fermentation; unless the peat, when dry, be very puffy and light; and then a much greater height is desirable.

#### THE POTATO ROT.

THE potato rot has for a number of years past been a scourge to the crops of New-England farmers, and many inquiries have been made as to its remedy, in all the agricultural papers; but as yet I have never seen any thing which appears to answer the purpose of saving the crop. Now I propose to send you the results of three or four years' experience, in which I have been eminently successful. While my neighbors have lost many, if not all of their potatoes, mine have remained sound, and kept well. The rule that I enjoin is: plant your potatoes just as early as the ground will admit, and put nothing but a spoonful of plaster in the hole with the seed. After the ground is once well clear of frost, there is not much danger of its being frozen deep enough to spoil the seed; and if the crop is grown so early in the season, it will lie in the ground in the fall, and be *sound*, while later grown and manured ones will rot. In this way of planting, I have this year taken my seed from the same bin as my neighbor, and from twelve bushels of seed shall have at least one hundred and fifty bushels of sound potatoes; while *his*, with only a fence between us, are scarcely worth the digging. Last year I carried a lot of fine ones to market, and was asked, "Why, how in the

world do you have such potatoes as these, while I have scarcely any?" I gave my way of raising them, and told my friend that I had lost none to speak of, but had a large yield, and had sold them for seventy-five to eighty cents per bushel. If you would ask to know more, you have my address.—*Boston Cultivator.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

### NECESSITIES OF RAILWAYS.

WANTED, Ten thousand able-bodied men to be employed in the different railway stations, in pitching, hauling and capsizing baggage. Persons of suitable qualifications will be liberally rewarded; others need not apply.

They should be gigantic in stature, muscular and athletic in form, and possess sufficient physical energy to seize a well-filled trunk of the largest size by one handle, and hurl it, pell-mell, from the car to the platform, or from one side of the station-house to another.

Preference will be given to those who have some practical knowledge of grand and lofty tumbling, as that is the department in which they will be mostly employed.

Persons who are not proof against those antiquated frailties of human nature, called civility and politeness, are not wanted. They must be made of sterner stuff than to yield to such weaknesses, or take notice of trifles.

When a gentleman or lady points out a trunk, valise, or box, and politely asks for it, they must show their independence by minding their own business, and leave the inquirer to learn a lesson in meekness.

The lessons to be learned are few and simple. They may be concisely expressed as follows:

1. Railway proprietors do not guarantee the safe delivery of baggage. No such thing. Passengers should be thankful if they get through with the *trunks* of their own bodies safe, even if divested of their fair proportions by the loss of a limb or two. As for baggage, 'tis enough if they get the handles, the lock, and the label. That will suffice for identification.

2. The railway station is a kind of public bowling-saloon, where the company's agents exhibit their dexterity, and test the strength of trunks and boxes by pitching, kicking, rolling, and tumbling, for the edification of hackmen and loafers, and the special gratification of the owners thereof.

3. Public carriers should practise no favoritism. Trunk and valise-makers are a worthy class of men, and deserve patronage. Ergo, here goes the old trunk.

The following simple rules should be committed to memory:

1. Always set down a trunk with *emphasis*. It will establish your authority over it, and your undisputed right to thump it. Further, if it contains a torpedo, or any other infernal machine, it will cause it to explode, and give you the benefit of the discovery.

2. Never let a trunk rest upon its bottom. Turn it bottom up, if possible; at least on its side. Always to rest upon the same foundation is decidedly *hunkerish*. The old saw, "Let every tub stand upon its own bottom," don't apply to trunks.

3. When you have occasion to move a trunk, either roll it or pitch it, or, seizing it by one handle, drag it forcibly across the floor or over the pavement. It serves to remove asperities both from the floor and the trunk. As certain physicians say, "it equalizes the circulation."



4. In stowing away baggage, always place the smallest and frailest articles at the bottom. If the contents are volatile, it will prevent their escape.

5. In the distribution of baggage, speak up as though you were on the tented field, at the windward side of a whole brigade, and wished the whole world to know that you are an *assistant* baggage-master.

Many other useful hints will be given when initiated.

Application may be made to any railroad station or on board any steam-boat.

VIATOR.

#### PEARS AT BOSTON.

ACCORDING to the last number of *Hovey's Magazine*, the show of pears at the late exhibition of the Massachusetts Horticultural Society far exceeded that of any former year. In common with many other parts of the country, the season at Boston seems to have been unusually favorable to this fine fruit, specimens of Diel and Flemish Beauty measuring eleven to twelve inches in circumference, and of the White Doyenné and Beurré d'Anjou, ten inches in circumference.

The extent of the collections may be inferred from the fact that Hovey & Co. presented specimens of 300 varieties; M. P. Wilder, 310; J. S. Cabot, 120; Samuel Walker, 100, &c. Many of these would be, of course, of little value; the Society accordingly offered large prizes for the twelve best selected varieties and best grown: the names of these we give below, and they show what the general favorites are in that place:

From W. R. Austin: Le Curé, Easter Beurré, Duchess Angoulême, Beurré d'Anjou, B. d'Aremberg, White Doyenné, Bezi de la Motte, Vans Mons Leon le Clerc, Passé Colmar, Louise Bonne of Jersey, Bartlett, and Urbaniste.

From Jos. Richardson: Beurré d'Anjou, B. Easter, B. Diel, Louise Bonne of Jersey, Urbaniste, Bartlett, Belle Lucrative, White Doyenné, Flemish Beauty, Le Curé, Duchess of Angoulême, and Dix.

From Jos. Stickney: Louise Bonne of Jersey, Winter Nelis, Bartlett, Easter Beurré, Marie Louise, Le Curé, Beurré Diel, Urbaniste, Glout Morceau, Belle Lucrative, Thompson, and Flemish Beauty.

From Hovey & Co.: Gray Doyenné, White Doyenné, Swan's Orange, Beurré Bosc, B. Diel, B. d'Anjou, Glout Morceau, Flemish Beauty, Doyenné Boussock, Bartlett, Duchess of Angoulême, and Louise Bonne of Jersey.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

#### A BAD PRACTICE.

MANURE.—Drawing out manure, and allowing it to remain in your fields, under the rays of a hot sun, to be evaporated, is a bad practice, to say the least of it. It is quite too common a practice, with many farmers, to draw out their manure on pastures, spreading it, of course, and it remains exposed to the sun until there is not substance enough in it to revive a pig-weed. Though it is preached up as a fact, by many scientific farmers and agricultural journalists, that a great amount of the strength of manure goes down into the ground, yet I am persuaded that much more of its nourishing qualities goes up than down, particularly where it is allowed to lie on the surface of the ground, exposed to the intense heat of the sun.

It is a very good practice, if you are abundantly supplied with fine manure,

to draw it out upon your wheat fields just before sowing your wheat, or before you prepare your ground for the drill. By this practice, you intermix the manure with the soil, and thus your wheat at once receives the advantage of the application. I am confident that this is the best way to apply fine manure, as you get some good from it; whereas, if you draw it out upon your meadow lands in a coarse state, many times in large lumps, you lose much of its intrinsic worth, which otherwise might be saved by judicious application. I have known lands to be covered with manure in the fore part of the summer, and I have known it to remain in this waste-like condition until winter, upon pasture lands. I should like to know what real benefit can be derived from thus applying fertilizing matter? Certainly no great; for, forsooth, most of it is lost by way of evaporation, and by the washing rains. Cattle do not like to eat grass growing out of manure-heaps, though they frequently eat it in the form of hay, in the winter season.

The best way, on the whole, in my estimation, to apply coarse manure, intermixed with straw, &c., is to draw it out upon your plough-fields, and plough it in as fast as you draw it. If it is very coarse, and you are bound to have it ploughed in, let a boy follow after the plough, and haul it into the furrow; but don't let it remain in the field until its main substance is gone to the four winds, to fall some where, you know not where.

W. TAPPAN.

## RULES AND FORMULÆ

### FOR CONSTRUCTING MACHINES AND PARTS OF MACHINES.

WE have given, in previous numbers, several "rules and formulæ," taken from the *Polytechnic Journal*, which were originally prepared for the readers of that learned work, by Messrs. Gritzner & Fleischmann, editors. We select a few more from the September number.

[The symbols are used as in the April and June numbers;  $d$  for diameter;  $N$ , the effect which the axis transmits, expressed in horse-power;  $n$ , the number of revolutions of the axis per minute.]

LONG TRANSMISSION AXES, and especially those used in spinning and weaving factories, ought to be so constructed that the angle of torsion will be the same for axes of large as well as of small diameters, and in proportion to the length of the axes.

For such axes we have—

$$d = 6.299 \sqrt[4]{\frac{N}{n}}$$

The angle of torsion will be  $= \frac{1}{827}$  for cast iron, and  $\frac{1}{846}$  for wrought iron.

For the construction of an axis of a walking-beam, which is supported on both ends, and the weight applied in the middle of it, let  $P$  be the pressure of the walking-beam upon the middle of the axis;  $d$ , the diameter of a journal;  $l$ , its length;  $D$ , the diameter of the axis next the walking-beam;  $L$ , the distance of the walking-beam from the middle of the journal.

Then we have—

$$\begin{aligned} d &= 0.077 \sqrt[4]{P}, \\ l &= 0.3428 + 1.21 d \\ D &= d \sqrt[3]{\frac{L}{\frac{1}{2}l}} \end{aligned}$$

## THE GREAT EXHIBITION.

THIS immense show magnifies its apparent dimensions, as one undertakes to give even its general outlines. But frequent visits and repeated observations on this subject satisfy us that the public *taste* is less educated than the intellectual faculties. Crowds pass by the Gobelins and the Sevres ware, and the scarcely less attractive goods now manufactured by M. Lahoche, and the beautiful Florentine mosaics, without any apparent consciousness that these are any thing more than they see every day. The Pope's *St. John* actually seems less attractive to the masses than the colored engravings of a shop-window. We say this not by way of complaint, of course, but of regret, and as we have watched the movements of the crowd, we have wished that some "public demonstrator" or skillful lecturer might take each little party of visitors, and, by explanation and comparison, illustrate the peculiar points of those objects chiefly worthy of note. If some superintendent of public instruction would employ a few scores of teachers competent to this task, we are sure he would do the State much service. We only add in this connection, that we discover very little difference in these matters, between the residents of city and country.

But we must proceed with our descriptions, commencing where we were obliged to stop in our November number, viz., at the entrance of the gallery over the south nave, from the tables occupied by the German States.

Our readers will remember an account of the statuettes of CHARLES T. COPELAND, in our September number, p. 174. We have surveyed that table many times since then, and have not changed our opinion of the peculiar merits of those works of art. They have been reârranged, and may now be seen upon a single table.

China ware and porcelain, by Charles C. Leigh, Agent of JOHN ROSE & Co., of London. These are of superior quality. The show includes vases, pitchers, ewers, tea and dinner sets, &c., in various styles, and of different materials. Some of them are of great value. On the first table, at the end of it, is "the Queen's pattern vase," being a copy of one in her Majesty's possession, of blue and gold.

Sundry statuettes in groups are among these wares, which possess great merit. Valor protecting Innocence, Sir Calapin rescuing Serena, "the Fairie Queen," Tam O'Shanter and Soutter Johnny, Brito Martis releasing Amoret, the fairie queen, &c., are among the most attractive.

Passing by the miniature steam-engine, standing upon an English sixpence, in the same case with the elegant watches of B. J. WARNER, London, (Platt & Bros., Maiden lane, agents,) we reach the show of English silver and gold wares.

The first case contains magnificent workmanship and designs, by HUNT & ROSKELL. An immense candelabrum is most prominent among these. On each corner of the base is a representation of living groups, and the standard consists of or is surrounded by other groups, (four stories of them in all,) with a vase for flowers on the top. The same manufacturers fill other cases near by, with salvers, cups, tea-sets, water-bottles, a mirror, &c., with two beautiful monumental designs of silver; there is also jewelry, exceedingly rich, with diamonds, opals, emeralds, &c., of most superb styles, and dressing-cases, furnished with articles for the toilet, with gold handles, and another,



silver-mounted, liberally furnished with perfumery bottles, &c. An elegant watch in a square frame is in each.

ELKINGTON, MASON & Co., Birmingham and London, fill the next cases, with gold and silver electro-plated wares, of very rare workmanship, of Egyptian and other antique styles.

The large glass case contains electro-plated wares, among which are a large centre-table ornament, designed expressly for the New-York Exhibition. Rock base, with oak branches supporting lights, and silver shells for fruit; the whole supporting glass bowl for flowers. Sea tigers on the triangular base. Flower stand, sea horses and glass shell. Set of three centre-pieces, Louis Quatorze. Flower-stand, shell, supported by coral and sea-weed. Rich dinner service, consisting of dish-covers, entrée dishes, soup tureens, wine coolers, &c., in the Arabesque style. Set of three centre pieces, modelled from the Egyptian Lily. Tea-trays or salvers. Large centre-piece, for eight lights, in the style of fifteenth century, with figures supporting baskets for fruit. Centre-piece for dessert service, with figures of Winter and Summer. A centre-table ornament, the national games of England. Inkstand, Rebecca at the Well. Inkstand, "Please remember the Grotto." Flower-stands, salt-cellars, spoons, forks, &c.

The next, a square glass case, containing works in silver oxide, silver, and gold, by the same manufacturers. Among these, are a sideboard dish, in silver relief, gilt, the subject of which is from the "Iliad." Set of three candelabra, after the antique. Race plate, designed by Gunkel, modelled by Rossi, at Rome. The bas reliefs, on the frieze, represent the three characteristic virtues of practical life, "Strength, Swiftness, and Prudence." In the centre appears a mask of the fair Goddess of Love, who looks out from a rich arabesque flower, as the incentive to every noble strife, and the promoter of all prize competitorship. Sideboard plate, representing the parable of the "Prodigal Son," a reproduction by electro-deposition. Fruit plate, in the Alhambra style. Celebrated cup, an electrotpe copy in pure silver, from the original one of the Benvenuto Cellini, now in the British Museum. A dish, of fine workmanship, obtained and copied for Messrs. Elkington, under the direction of the Chevalier de Schlick. The eight subjects in bas relief, represent Minerva, Astrologia, Geometria, Arithmetica, Musica, and Rhetorica. The centre figure represents Temperance, surrounded by the four elements: as made, mounted as a table, for her Majesty, Queen Victoria. Mirror, in oxide silver, electro-gilt; similar to one purchased by Her Majesty, Queen Victoria, at the Dublin Exhibition. Cups and vases, beautifully embossed with figures of centaurs, ivy, and vine wreaths, &c.; electrotpe copies of originals discovered at Pompeii and Herculaneum, and now in the Museum at Naples. Plate, representing seven days of the week, modelled by Duc du Luynes. Inkstand, slaughter of the "Niobe." Inkstand, designed to commemorate the London Exhibition of 1851.

Bronzed wares, also electrotped, fill the next stand. Among the more attractive articles are: Cupid, with the Lyre, from original, by Thorwaldsen. Dish, representing Trojan Horse entering Troy; copy of a fine old silver chasing. Vase, from original in British Museum; Copy of celebrated Warwick vase. Sideboard dish, subject from the "Iliad." Busts, of Homer, Sophocles, Aristotle, Demosthenes, &c., from antique sculpture. Cup, the Apotheosis of Homer, from Pompeii.

These gentlemen are the patentees of the process of gilding and plating metals, by the agency of electricity, commonly called electro-gilding and plating.

This patent was granted in March, 1840, and since that time the manufacture of articles by this process has become an important branch of industry, and is rapidly increasing. The patentees employ about five hundred work-people, and, necessarily, some of the first designers of the day. "To show the industrial importance of the manufacture, it may be stated, that in addition to the immense productions of the patentees, the process is extensively adopted in France, and other foreign countries; and there are also about thirty other manufacturers in England, licensed to use the process, the patentees, of course, having no control over the quality of the articles produced by those so licensed.

The advantages which plating by this process possesses, are:

1st. The application of a white metal, approximating silver, in hardness and color, as a base instead of copper, and upon which the pure silver is deposited.

2d. The removal of all restraint as to form. The most elaborate ornaments, and the most complicated designs which can be produced in silver, are equally obtainable by this process.

3d. Permanency of plating, the coating of silver becoming, by the agency of electricity, one body with the metal on which it is deposited, rather than a mere covering.

4th. Economy in first cost and durability; in the multiplication of works of art of the highest character, this invention is now taking an important position; and the patentees have established a branch manufactory for such objects, and are now producing, with equal precision and perfection, copies from the smallest gem to the colossal statue, possessing all the accuracy and beauty of the original design."

ANGELL, 10 Strand, London, displays rich silver and gold wares in the next case. Among these is the group Sir Roger de Coverly and the Gypsies, the "Æsop Service," ornamented with illustrations of Æsop's fables, the ornaments of which are separate from the service, and may be removed from it, and the service used perfectly plain. Other ornamental pieces representing, The Halt in the Desert, The Cellini Vase, Etruscan claret jug, Vintage do., an antique tea caddy, Shakspearian inkstand, antique ale-tankard, &c., all of superb workmanship.

CARRARD furnishes the next case. Among these works of art are a huge candelabrum, vases, pitchers, salvers, ewers, &c. The group, "Don Quixotte," in which the hero himself, Sancho, and the Don's Dulcinea, with Rosinante and Sancho's horse, are excellently well grouped and executed.

THE LANDING OF THE PILGRIMS, in massive silver, belonging to Mr. Thayer, of Boston, and manufactured in London, is seen still farther on.

Passing by the prize-cap offered for the best article on Jurisprudence, we come to the last of this show, the case from

SMITH, NICHOLS, & Co. These are rich wares, but inferior to some of those we have mentioned.

This series of cases contains more massive wares, and wares more floridly ornamented than those of the American manufacturers described in our last. A few of them are probably superior as exquisite works of art. But for chaste designs, elegance of pattern, and quality of material, we think the American compares very well with the English ware. We say this not to disparage the English, but as a fact, which may be fairly stated to the honor of our own manufacturers. Still we ought not to pretend to compete extensively in this department with the English, for our manufacturers must have produced the richest of these samples at a great risk of loss, since we have

not—or *should not have*—one purchaser for them, where the English have many. There are many Englishmen, each of whom could “buy out” a score of our wealthiest men.

Passing to the opposite side of the stair-way, by the large and very substantial Axminster Carpet, suspended there, let us commence a *return* along the row of tables parallel to the route just passed. The show of HAYES’ Royal Irish linen thread need not detain you. The cases beyond are more attractive. The first is filled with wares manufactured by CHAS. H. FARQUHAR & Son, Edinburgh, consisting of goods for the use of hunters, &c., of excellent workmanship. In the next is Malachite and Pebble jewelry, by AARON, BROTHERS, England. Next we see hair and bog-oak ornaments of superb workmanship, by John Fletcher, Sligo, Ireland.

SKIDMORE & SON, Coventry, exhibit church metal-work; chalices, patens, &c.

WM. WYON, R. A., chief engraver to the royal mint, exhibits, in the next case, some very handsome medallions, coins, &c., from the royal mint.

WATERHOUSE & Co., the Queen’s jewellers, Dublin, exhibit a great variety of emblematic jewelry, among which are, The Harp, the Oghum brooch, royal Tara brooch, Conynghame brooch, silver Templar’s and Knight Templar’s brooch, &c.

CORNELIUS COGGIN, Dublin, exhibits a case of bracelets of bog-oak, and emblematic brooches of the same, such as the wreath-shamrock, the sprig-shamrock, Irish pearls; also horse-hair ornaments of perfect workmanship, and brooches of Connemara marble.

J. & C. BERRIAN, Sheffield and Birmingham, exhibit silver plated wares.

Opposite these tables are shawls in variety, by A. ORR EWING & Co., Glasgow. Silks in variety, by WILSON & CLARK, Manchester.

Passing on, we come to several tables covered with various china and porcelain wares, by T. & J. MAYER, Longport, Staffordshire. On the floor stand several *logs of wood*, as any one would presume, but examination proves them to be of porcelain. Sundry urns, statuettes, vases, bowls, &c., occupy tables. One of those bowls is very superb, the painting being of the highest style of art. It is of large size, holding several gallons.

We are now by the side of a small CHURCH ORGAN, by F. HECHENGER, from the German States, apparently inclined to *harmonize* with its English neighbors. The key-board is upon the back-side of the organ, and is elevated several feet above its base. The bellows are entirely outside the organ, and connected with it only by a wind-tube.

Further on, we find the beautiful show of MINTON, from Stoke, upon Trent. His statuettes are very beautiful, equalled, in the Crystal Palace only, by those of COPELAND. The selection of subjects represented is also very fine. Among these are Prometheus, Shakspeare, Christ blessing little children, the three Marys, Naomi and her daughters-in-law, Venus and Cupid, Child playing with her mother, the wounded Indian, Flight into Egypt; Cellini ewer and plateau, by GUINOT; the Verulam jug, Parian, red and gold; Nelson, Wellington, Temperance; Parnassus vases, royal purple with wreaths of roses; Harewood bottles, vase with the bronzes of Cyrus, &c., &c. He has two superb flower-pots, very large, and other rural designs.

Encaustic tiles for floors are suspended from the eastern side of the nave, by the same exhibitor.

Following the course thus designated, we reach the case of T. & R. BOOTE, which contains some exquisite specimens of Waterloo pottery, worthy of very especial notice. Also, some beautiful statuettes.



SAMPSON, BRIGWOOD & Co., and THOMAS DIMMOCK, Jr., & Co., both from Staffordshire, exhibit various china wares.

SWAINE & ADENEY, Picadilly, London, have a splendid show of whips.

AINGE & ALDRED, London, a beautiful assortment of bows and arrows, fishing-tackle, &c.

Turning the corner into the eastern nave, towards the picture gallery,

JAMES PAUL, of Glasgow, exhibits the prize Plush of the London Exhibition. It is very beautiful.

Passing rapidly thence along the tables, we notice mathematical instruments, globes, maps, a fine barometer, optical instruments, clocks and watches, very superior, by E. D. JOHNSON, London, with a marine chronometer. Superb watches also from R. F. COWDERRY, London, optical instruments again, a beautiful show of "ornamental water-marks," or paper transparencies, by T. H. SAUNDERS, and maps of physical geography, by WM. S. ORR, London; daguerrian views of the Crystal Palace in London, Hydrometers, and other objects in variety, too numerous and unimportant to mention in detail.

On one of these tables, is a fine assortment of Tunbridge ware, SHEPHERD'S safety lamp, sundry soaps of D. & W. GIBBS, London, in great quantities, glass transparencies, &c.

Turning away from the picture-gallery, we find fringes, tassels, &c., of silk, gold, and worsted, by HAMILTON HYDE & Co., London. Still further on are rugs in great variety, numerous enough to furnish a large store, and at the end of the table is a fine display of articles for the toilet, by TAYLOR & SON, perfume distillers, &c., King's Road, Chelsea, London.

On the opposite side of the court are knit woollen goods, by JOHNSON, BROTHERS & TOWNSEND.

The remaining courts of this section are occupied by numerous contributors, who exhibit a great variety of female wearing-apparel, such as robes, (infant's,) stays, hose, gloves, handkerchiefs, under-clothing, boots and shoes, fancy cloth and gingham dresses, also shirts, fronts, gloves, &c., &c., for gentlemen.

Among these is an elegant wrought handkerchief, a present for the wife of President Pierce. There are also some very rich lace dresses from Dublin, the handsomest of the kind in the palace, various elegantly-wrought goods, "richly embroidered by poor girls," from Belfast, Ireland, and other matters which we lack skill to describe.

This brings us to the picture-gallery, which we have already described. We therefore pass on to the other side of the nave, and leaving the agricultural wares for their own appropriate chapter, we specify a few interesting objects that belong to the

#### MISCELLANEOUS DEPARTMENT—UNITED STATES.

In the north-east gallery, as our readers already understand, a large space is occupied by the comparatively cumbrous tools of the farmer, forming the United States agricultural department. But extensive *territory* is also occupied by goods of every different description. We specify a few, all that our limits will, at present, permit.

BONNETS.—Broadway, Division street, Chatham street, and some other streets, are here represented by all sorts and conditions of goods of this description. The plain Quaker drab at one extreme, and at the other, all sorts and kinds and qualities, whether gaudy and tawdry, or brilliant, or elegant, or rich, dashing crimson, the joyous pink, the beautiful blue and green, the chaste white, and all other shades and varieties of hue, are here side by side. We will not force ourselves into the seat of a judge, on these goods, lest we

be charged with interfering with woman's rights. We only remark, that fit representatives are found in this assortment for "all sorts and conditions" of people, from the top of the Fifth avenue to the humblest dweller in Cross or Mulberry streets.

BOOTS AND SHOES, GLOVES AND HOSE, in large quantities, and in great variety, are displayed here, and on the whole the show of these manufactures is very fine.

But these are met with in all places of merchandise, and we will not stop *here* to describe or to criticise them. We may do so by and by.

ASHARD, BROTHERS, manufacturers of the perfumed oriental crystal, 28 Abington place, N. Y., have in this gallery a very tasteful display of a very attractive article. In a glass miniature Crystal-Palace, Mr. RING, the agent, exhibits a great variety of perfumery, confined in Liliputian glass. A few drops of the liquid perfume are enclosed in very small, thin tubes, hermetically sealed. One of these is grasped in the folds of a handkerchief, the glass is shattered, and the fragments shaken out, while the odor manifests itself very distinctly. By this process, there is no danger of loss by evaporation, the necessary consequence of a frequent opening of larger bottles. These "crystals" are neatly arranged in paper boxes, and may be purchased in various quantities.

PROF. WIDDOWS, Thompson street, N. Y., exhibits, in small vials, a liquid cement, styled *Metropolitan Crystal Cement*, very highly commended for mending broken glass. If a tumbler, lamp, or other glass vessel is broken, the edges that were separated are to be moistened with this cement, rendered more fluid by immersing the bottle in hot water. The parts are then held together awhile, after which the vessel must be left a few hours for the cement to harden, when the excess of cement may be rubbed off. The joint, of course, is visible, but the vessel is not discolored, and it will bear, afterwards, even hot water with impunity.

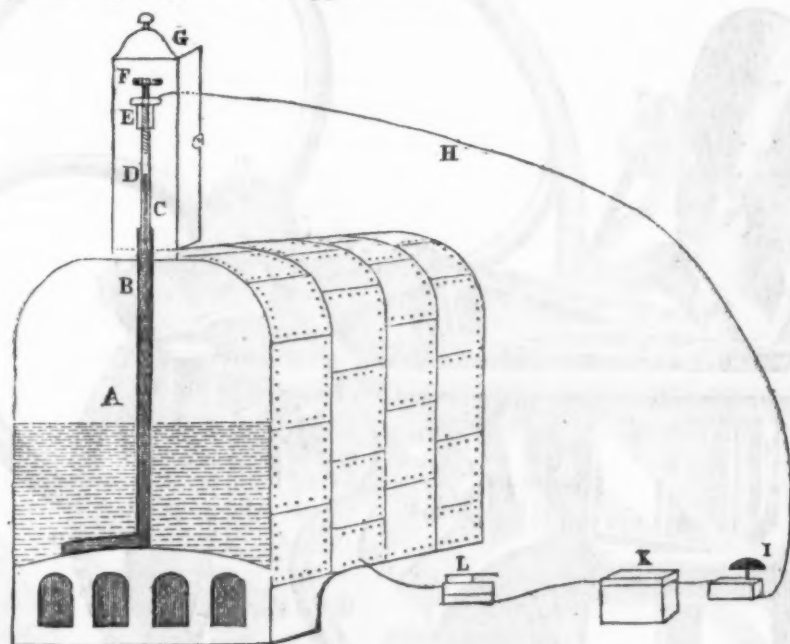
BENNINGTON WARES.—In the same section with these last two articles is the fine show of recent wares manufactured at Bennington, Vermont. These are various not only in their forms and colors, but also in their material. the result of a different proportion of the clays of which they consist. This material is a variety of kaolin or porcelain clay, which is found only at Bennington, although, of other varieties of porcelain clay, there are numerous deposits in this section of the country. It is a peculiar mixture of flint, quartz, and feldspar. The manufacturers have a patent for their enamel, or the burning in of their colors, which produces a brilliant glossy surface, which resists the action of all acids.

THE NEW-ENGLAND GLASS COMPANY.—These wares are also on exhibition by the side of those just described. The excellence and beauty of these manufactures demand a more particular notice than we now can find room for, and we therefore leave them for the present. We allude to them because they are too important to be passed by in silence, among the other manufactures in the same section.

#### UNITED STATES AGRICULTURAL DEPARTMENT.

STEAM GAUGE TELEGRAPH FOR THE PREVENTION OF BOILER EXPLOSIONS. DUNN'S PATENT.—This electric telegraph is intended to give alarm, before the water gets so low in the boiler as to be dangerous, to the operating engineer. On steamships, another instrument is placed in the state-room of the chief engineer, and both are notified at the same time. It also supplies a telegraphic key

for communication from the operating to the chief engineer, should any thing require his presence at the engine, without the operating engineer leaving his post, or detaching a messenger from his duty, or causing alarm to others. It can also be used for steamboats, land engines, &c., with a communication to the chief in his office, or to any other point, at any distance—the connection being made by any iron or copper wire.



This apparatus is connected with the steam-boiler, A, by an upright iron tube, B, (bent at right angles in close contact with the flue surface) closed at the lower end, and filled with mercury up to the glass tube, C, with which it connects—the mercury as high in the glass tube, C, as the mark D. The glass tube, C, supports a ferule, E, with an adjusting screw, F, through its centre, for the purpose of regulating the space between the surface of the mercury and the lower end of the screw. G is the case to protect the end of the tube from injury, and may be kept closed and locked, as it need never be opened except when the engineer chooses to adjust it; a wire, H, connects the screw, F, with the *bell instrument*, I, also with the *battery*, K, in connection with the *telegraph key*, L, and finally, with the boiler, A, to complete the circuit of the electric current.

#### OPERATION.

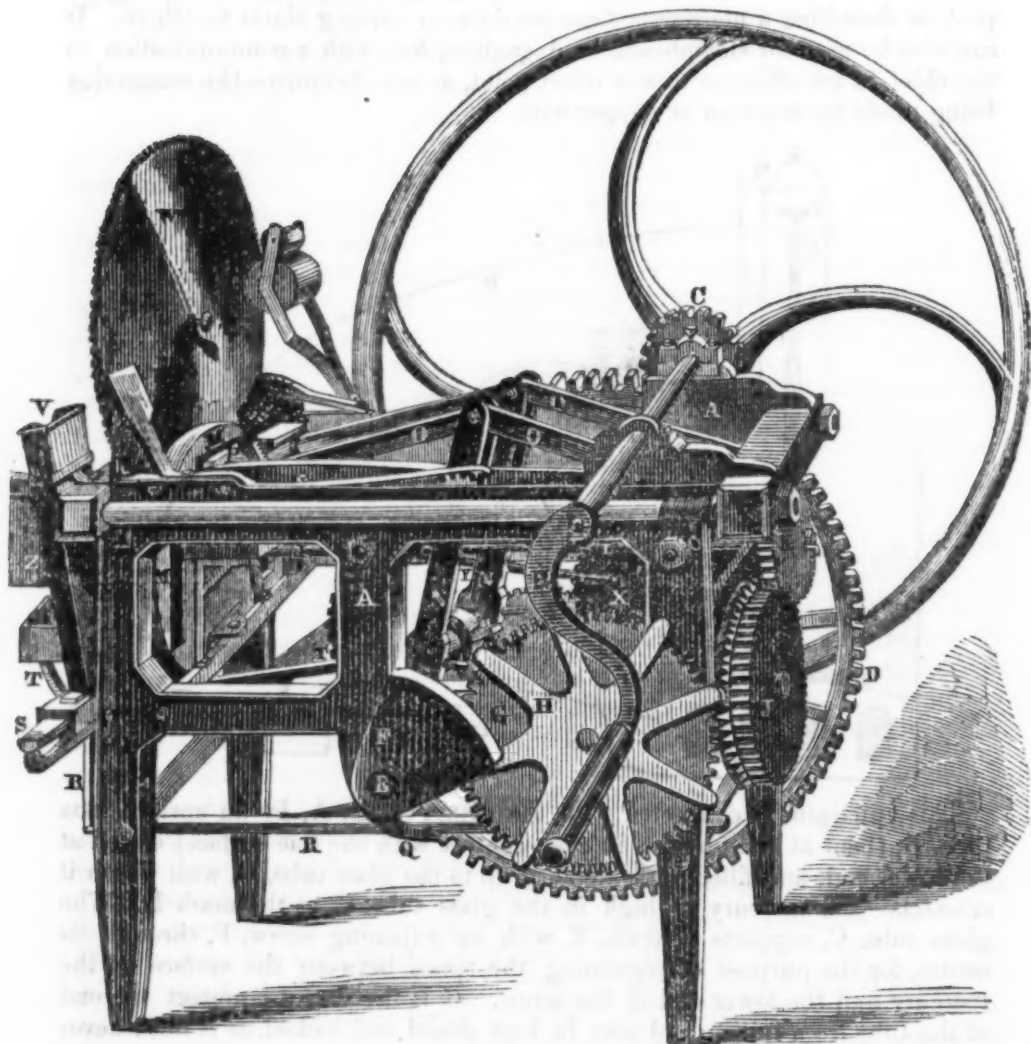
When the water commences to fall below a definite point in the boiler, *established by the engineer-in-chief*, an increase of temperature takes place which expands the mercury in the tube, B, and raises its surface into contact with the point of the screw, F, thereby closing the circuit of the electric current. At that instant the bell commences ringing to give an alarm that the water is getting too low, in time to prevent an accident.

For further particulars, application may be made by letter, or otherwise, to Pease & Murphy, Fulton Iron Works, foot of Cherry street; to Mr. Quintard, at Morgan's Iron Works, foot of Ninth street; or at the Company's office, No. 20 Nassau street.

The prices for different applications of these gauge telegraphs, including the instrument and full directions for its use, complete and set up in working order, vary from one hundred to three hundred dollars, according to the number of boilers in use, &c.



## PARKER'S PATENT TOBACCO PLUG-PRESSING MACHINE.



THE annexed engraving is a perspective view of the machine for pressing plug tobacco, for which a patent was granted to A. A. Parker, of St. Louis, in 1852. This machine is on exhibition at the Crystal Palace, and as the tobacco trade of our country is very extensive, it attracts the attention of all engaged in the tobacco business.

## A DESCRIPTION OF THE MACHINE, AND ITS MODE OF OPERATION.

A A is a frame of the machine, and B is the driving handle of the main shaft; on the opposite end is a fly-wheel for the purpose of keeping up a regular motion of the machine. This shaft can be driven by belt and pulley, as in the Crystal Palace; C is a pinion-wheel gearing into and driving the cog-wheel, D, on the shaft, E, of which it may be said all the peculiar motions are transmitted; F is a sector cam on this shaft; it has two pins on its inner face, and as it revolves, these pins take into the arms of the star-wheel, H, which moves said wheel two arms for every revolution of cam F; G is a wheel on the stud of H, it gears into a wheel coupled with the one J, which gears into the pinion, K, and revolves its shaft, L. On the other extremity

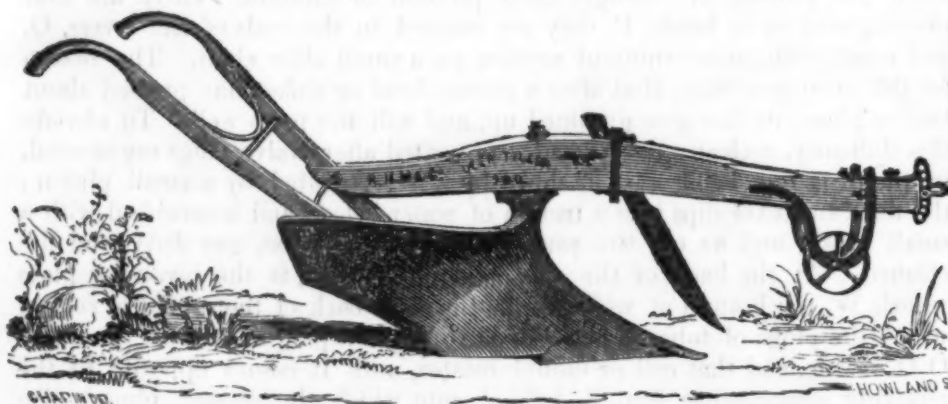
of this shaft is secured the mould or cell disc, M, in the compartments of which the tobacco is pressed. By the motions described, it will be observed that the mould disc, M, has an intermittent rotary motion, and that one quarter of it (one cell) is moved every revolution of the shaft, E; N N are pitmans secured on the shaft, E, and attached to the toggle-jointed levers, O O. These levers press the tobacco in the moulds, for as the shaft, E, revolves, the pitman, N, being placed eccentrically on it, as they draw down, they make the levers, O O, force a pressing-head into the cell or mould of M, and press the tobacco firmly in the same; the toggle-jointed levers will recede when the pitman, N, changes their position in rotation. There are four pressing sinkers as heads, P, they are secured to the ends of the levers, O, and rotate with an intermittent motion on a small slide shaft. The reason for this arrangement is, that after a presser-head or sinker has pressed about twelve plugs, its face gets gummed up, and will not press well. To obviate this difficulty, a clean presser-head is presented after twelve plugs are pressed, by the dirty one being turned down by a rod operated by a small pinion; the unclean sinker dips into a trough of water below, and is scrubbed with a small brush, and so on, the presser-heads rotate, press, get dirty, and are cleaned. At the back of the cell or mould disc, M, is the revolving plate wheel, W, the bottom of which forms the solid back of the mould or cell, in which the plugs of tobacco are pressed. When a plug is pressed, the levers O O, recede, and that cell or mould rotates, until it comes opposite to the receiving compressing box, Z, behind, into which the pressed plug is discharged or forced by a plunger attached to the thrusting rod, Y, which is secured to the wheel, X, eccentrically, which gives it a reciprocating motion. The mould-boxes are filled or fed from hopper, V, into which the loose roll of tobacco is placed by two feeders, S and T, the one, S, receives it from the hopper, and carries forward as much as will be a plug, to the one T, which then takes it forward and forces it into the back-side of the lower cell or mould of M. The feeding motions of T and S, are by levers, R and T: the one, R, is operated by a cam, Q, on shaft E, which forces it forward, and then it springs back to feed forward another plug. Thus there is one cell or mould of M, filling, one in which the tobacco is being compressed, one being discharged, and one passing empty to get filled, all the time. The back of the pressing cell—the plate-wheel, W, is kept clean and free from gum, because it gears into teeth on the back of M, and revolves. As this wheel revolves it is met with a sponge at one side, and above that it is oiled with a roller rubber. This softens the tenacious gum of the tobacco, which is then easily scraped off by the broad scraper seen at the left hand side. This enables the moulds or cells of M always to have a clean back. This is essential to the successful working of the tobacco-pressing machine. The common presses for pressing tobacco are very defective; this one is entirely new in principle, construction, and all its operations.

The receiving compressing box, Z, into which the plugs are discharged from the moulds or cells, embraces a principle essential to the success of a tobacco-pressing machine. If the tobacco was freely discharged when quickly pressed into plugs, it would soon lose its form and compactness. This receiving compressing box or contractor, has its bottom, top, and sides composed of endless belts, and it is of such a size as to hold the plugs under pressure while confined for about half an hour, during which time the plugs lose their elasticity, and always retain their form after they are discharged. This machine presses about twenty plugs per minute, and the receiving compressing box contains a great many plugs, as it is somewhat long. When full, as one pressed

plug is thrust in by the lever, Y, one is discharged at the upper end, ready to be packed up, and so on, continually.

The pressing power of the press can be increased by extending or diminishing the distance between the back and front ends of the levers, they being attached to the cross-bar at the back of the machine, which can be shifted forward or back by the large screw rods, one of which is seen passing through them. This is a good arrangement for graduating the pressing power.

PLOUGHS, &c., BY RUGGLES, NOURSE & MASON.



THIS enterprising house displays a greater variety of implements of their own manufacture, and of most excellent quality, than any other exhibitor of agricultural implements in the Palace. We specify a few of these :

**PLOUGHS, in series.**—These are of all sizes from the deep-tillers, "No. 77," with a capacity to carry a furrow from 9 to 13 inches deep, by 15 to 17 inches wide, to those 5 to 8 inches deep, by 9 to 13 inches wide. Then we have their sod plough ; plough for stiff soils, turning furrow, 6 inches deep by 9 inches wide ; the swivel or side-hill plough ; plough for stubble land ; the double plough, or soil and sub-soil in one, &c., &c.

The list, if complete, would be too much extended. The forms of their mould-boards are peculiar, being determined by mathematical calculation and by actual experiments, with reference not only to the power of draught, but also the condition in which they leave the furrow.

The engraving represents the Eagle Plough, No. 71½. Its mould-board is of a long, gentle curvature, specially designed and finely adapted for ploughing the loose, porous, dry, sandy, and gravelly loams. It turns sod-furrows from 5 to 8 inches deep, by 11 to 13 inches wide, on so long and easy a twist as to avoid unduly opening and disuniting their constituent parts. The defect of such soils is, that they are already too open and porous, and therefore too readily give up their moisture and fertility by evaporation. They greatly want more condensation and compactness of parts ; and hence the powerfully pulverizing plough is not the best plough for working them. They are best ploughed in perfectly flat furrows, the edges of which are closely matched in, and the cohesion of the parts of which is so preserved, that the ploughed land lays even, smooth, and firm, and not too loose, open, cracked, and uneven. The best and most experienced cultivators of light dry lands have found that thus ploughing them, and then compressing the furrows closely with a heavy roller, insures the best germination of seeds, the best stand of crops, the best protection of the growing plants from the parching and withering influences of drought, and the excessive heat of American summer seasons.



It is confidently recommended for the working of loose, dry, sandy, and gravelly soils.

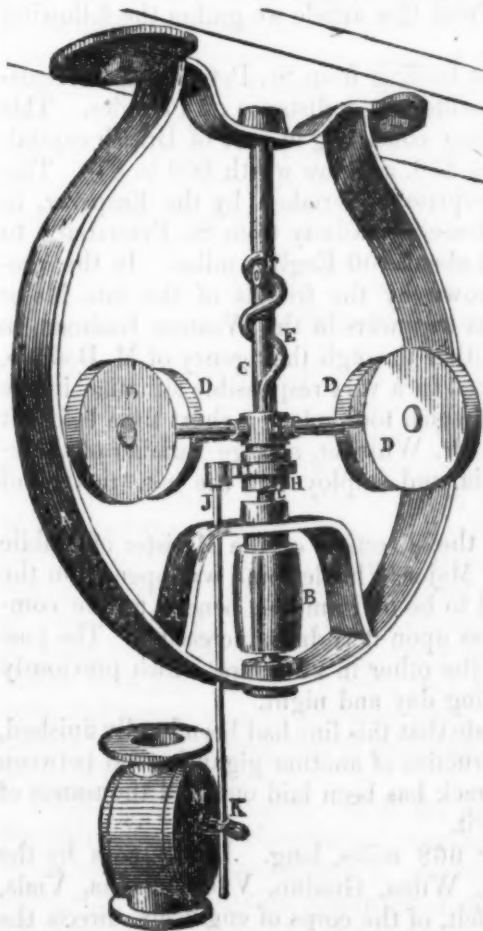
**HARROWS.**—The same firm exhibits a variety of these: the improved hinged harrow, the Geddes harrow, the expanding and reversible harrow, the Scotch harrow, and the triangular, folding, or Chandler's harrow.

Cultivators are also exhibited by them in variety.

Cotton sweep, cotton scraper, horse-powers, rollers, seed-sowers, cradles, garden engines, tan mills, hay, straw, and corn-stalk cutters, corn shellers, corn and cob-crushers, cotton gins, improved patent grist-mill, sugar mill, and almost every variety of tool or machine in use upon a farm, is in the catalogue exhibited by these gentlemen.

**HITCHCOCK'S COMBINATION IRON PUMP** is one of the newer forms that have fallen under our notice. This consists of a movable India-rubber "valve" in the top of the pump, connected with the lever, and which therefore rises and falls with it, produces the vacuum or the pressure; for it may be made a lifting or forcing pump, at pleasure, and avoids much if not all the friction which is commonly attendant upon pistons and valves.

**TREMPER'S PATENT PNEUMATIC GOVERNOR, AND REGULATING VALVES, FOR STEAM-ENGINES, WATER-WHEELS, PROPELLERS, &c.**



THIS regulator and steam-economizer is on an entirely new principle, simple, cheap, and not liable to get out of order. The action of the governor is so quick, that the steam is applied precisely as the work is put on the engine, and cut off at the instant the work is taken off, keeping the power and work equal, a point in regulating no other regulator can do. In simplicity, regularity of its work, and saving of fuel, it is claimed to be superior to any other regulator.

**EXPLANATION.**—A A is an iron frame for supporting the spindle, C, which is kept in motion by a belt running on the driving pulley, B. D D D D are four heavy metallic discs, presenting considerable surface to the air; these are fixed to the ends of flexible bars which radiate from the bush or socket, G, this latter turns loosely upon the spindle, and can also slide up and down it. Affixed to G is the curved or spiral rod, E, whose action is simple and efficient. For when the governor is put in motion the spindle will impel the roller, F, attached

to it under the spiral, which is consequently forced up, drawing with it the bush, G, and its appendages; but when the discs have acquired a velocity equal to that of the spindle, the further ascent of the spiral will cease. Should

the speed of the spindle diminish, the velocity of the discs will not slacken, on account of their acquired momentum, and in consequence their weight will induce the spiral to descend. The valve inside the valve-box, M, is operated by means of a rod, J, which, by the intervention of I, (constructed in the usual manner,) partakes of the traverse of the bush, but not of its rotary motion. H is a stop to limit the descent of the discs, &c., this stop is secured to the spindle by the pin, L. The mode of attaching the rod, J, to the valve stalk, is shown at K. The valve is not shown here, but it will doubtless suffice to observe that it is perfectly balanced, so that it works as easily under any pressure of steam as when not in use, needs no packing, cannot get out of centre, and is free from every objection that the most critical might allege against its efficiency. A governor of this description for a 100 horse-power engine weighs only 15 pounds.

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#### THE RAILWAYS OF RUSSIA.

A FRENCH journal publishes from the *Augsburg Gazette*, an interesting account of the progress which has been made within the last few years in the prosecution of railways in Russia. From this article we gather the following facts :

The first railway in Russia was that leading from St. Petersburg to Tsarskoye and Paulowski, two imperial residences, a distance of 17 miles. This road was opened in 1836, by a company consisting in part of British capitalists; and the shares, which cost \$40 to \$50, are now worth \$60 to \$70. This was soon followed by the great enterprise undertaken by the Emperor, in which he took a deep interest, of a first-class railway from St. Petersburg to Moscow, 607 versts in length, or just about 400 English miles. In the prosecution of the work, it is well known by the friends of the late Major Whistler, who was one of the efficient engineers in the Western Railroad, in Massachusetts, that he was invited thither through the agency of M. Bodisco, the Russian Minister, and was employed in a very responsible situation in the conduct of the work, until his death, which took place a short time before it was finished. Under the agency of Mr. Whistler, a large number of American mechanics were invited to Russia, and employed in the construction of locomotives and machinery.

This work was constructed under the direction of the Minister of Public Works, Count Kleir Michel, aided by Major Whistler, and was opened on the 1st of November, 1851. It is found to be of immense benefit to the commerce of the country, and the business upon it is daily increasing. The passage is made from the one capital to the other in 22 hours, which previously occupied four days in diligent travelling day and night.

The *Augsburg* paper goes on to relate that this line had been hardly finished, when the Emperor ordered the construction of another gigantic road between St. Petersburg and Warsaw. The track has been laid out, and thousands of laborers are now engaged in grading it.

This road will be 1,010 versts, or 668 miles, long. It will pass by the cities of Louga, Pskoff, Dunabourg, Wilna, Grodno, Vileka, Duna, Viala, Niemen, and Narev. General Gertsfelt, of the corps of engineers, directs the works of this road.

While this great railway is in prosecution, a company has been formed at Riga for building a branch, which is to unite the seaport with the city of

Dunabourg, and thus connect Riga with the two capitals of Russia and Poland. This branch, the track of which was laid out by the engineer Gonzenback, will be about 138 miles in length. It will keep along the right bank of the Duna, and will pass near the cities of Johobstadt and Fredericstadt. The capital is fixed at nine millions of rubles, and it is hoped that the Government will grant a guaranty of interest at 4 per cent.

Another line, which is not yet begun, is to unite Dunabourg by Smolenski, with Moscow, and establish a direct communication between this ancient Russian capital and Warsaw, by the route which was pursued by the advance and retreat of the French army in 1812.

In the south of the empire, the Government is about, it is said, to authorise a company, by granting a guaranty of 4 per cent., to undertake the construction of a railroad between Kharoff and Odessa. This road will cross the Dnieper at Kreineetchong, above the rapids, which obstructed the navigation of the river. This road will benefit the commerce in grain in the same manner as the line from Dunabourg to Riga is destined to help forward that of timber.

Finally, in the kingdom of Poland, where, for some years, the line from Warsaw to Mysolvitz, in Prussian Silesia, has been in full activity, two other lines are thought of: one from Warsaw to Bromberg, the other from the same capital to Posen; but the arrangements necessary to be made with the Prussian Government for this purpose have not reached a satisfactory result. The line from Warsaw to Mysolvitz, a little more than 200 miles in length, puts the capital of Poland in communication by railway with Vienna and Berlin, and consequently with Paris. When the line which is to join Warsaw to St. Petersburg is open for travel, which it is expected will be in about three years, the immense distance which separates France and Russia may be travelled over in four or five days.

#### MONUMENT TO MR. SKINNER.

MR. EDITOR:—Yours of August 29th was received on the 13th, for which I thank you very kindly. I certainly have nothing but the kindest regards for *The Plough, the Loom, and the Anvil*: permit me only to except its articles which bear so strongly on the Tariff. I could not do otherwise. It has John S. Skinner for a father. "And why should I like it on that account?" will you or any other one ask. I moved to Mississippi in 1830. In January, 1831, I moved to a spot within ten feet of that where I now write, and during the year I began my agricultural reading under J. S. Skinner. Soon—probably in 1832—I bought the old series, then published, of the *American Farmer*, and continued taking every paper he put his hands to, until our Master took him hence. I have ever felt that I was more indebted to Mr. John S. Skinner than to any man alive. Feeling thus, I have, on one or two different occasions, proposed to honor his name by aiding in erecting a monument to his memory.

I will again propose it. Will the agriculturists who were subscribers to Mr. Skinner's works consent to honor his name by some memorial? Could we as his friends be permitted to provide a stone for the Washington Monument, with an inscription somewhat of this character; viz.: "The admirers of the persevering efforts of John S. Skinner to build up the agricultural interests of America, as shown by the *American Farmer*, &c., &c., and his untiring labors in the cause of agriculture until his death, provide this slab to honor



alike the beloved Father of our country and the Father of American agriculture." Suppose a marble stone costs *even* \$500, certainly there are 500 who will pay \$1 each, or 100 who will pay \$5, or 50 who will pay \$10. Send up your names to the editors of *The Plough, the Loom, and the Anvil*.

Will the Trustees of the Washington Monument permit this? Will this measure suit the friends of Mr. Skinner? Let us do something.

Yours very respectfully,

M. W. PHILIPS.

*Edwards, Miss., Sept 15, 1853.*

#### REMARKS BY THE EDITORS.

WE have received several letters similar to the foregoing since the decease of Colonel Skinner. Since the above came to hand, we have mentioned the subject to many prominent friends of agriculture, and a plan is about matured by which we think the proposed object will be attained. Meanwhile, we shall be very glad to hear further from any of the friends of Colonel Skinner, or any of our readers, in relation to the subject.

#### A NEW METHOD OF MODELLING IN PLASTER.

HIRAM POWERS has written an interesting letter to the editors of *Putnam's Magazine*, descriptive of his new mode of plaster modelling for sculpture. As it is a subject in which every artist will take deep interest, we lay a brief description of his plan before our readers. The principal tools used in the work consist of chisels, scrapers, and trowels, the blades of which are of gutta percha, set in metallic backs, and elastic, so that the plaster can be put on with them somewhat as with a brush; and *perforated or open files*—every tooth having an opening in front of it, through the body of the instrument, so as to allow the dust and filings to pass through and escape, leaving the teeth unclogged and free to act. The files are of various forms and sizes, being curved, round, flat, &c. The material used is common plaster of Paris.

In projecting a human figure, a pair of irons, reaching nearly as high as the hips, and corresponding in general direction to the bones of the legs, must be set up on a platform, and around these a base must be formed, to hold them firmly, by pouring a sufficient quantity of mixed plaster to produce it. With these for a nucleus, the statue is then commenced, to be built up with *bricks and mortar*. The bricks are made by pouring a quantity of plaster on a piece of oil-cloth, and as it begins to harden, scoring it deeply with a knife or chisel, so that when quite hard it may be easily broken into fragments of a desirable size. Courses of these bricks are built up around the irons, and above them, until finally the entire body is finished in this rough manner, the layers being cemented together by plaster-mortar. The chisels are then brought into play for the purpose of roughing the figure (consisting of legs, body, and head) into the general human shape. A long brick is then dipped in fluid plaster, and the end applied to the shoulder. It soon adheres, and forms the nucleus of the upper arm. To it another brick is attached to form the fore-arm. When these are filled out with plaster, the whole body is covered with a coating of the same, and the files brought into use, which soon produce an even surface, taking off all irregularities.

The advantages of these models over the ordinary clay models which are generally constructed, are, first: A clay model cannot be changed materially after it has once been commenced, for the iron skeleton which sustains every

part of it is a fixture ; but in the plaster-work the iron frame is only in the legs, and all the rest can at any time be cut apart and varied from the original design in accordance with any after-thought of the artist. The plastering neither shrinks nor swells from exposure, and does not require wetting or covering it with cloths to keep it in order. The process is less tedious than clay modelling, for by means of the *open files*, more can be accomplished in a day than with clay in several days. And again, no moulding is necessary to transform the form from clay to plaster ; the plaster figure, as it came from the artist's hands, is itself the model. Mr. Powers says, modelling in plaster is not new ; he only claims his way of doing it as new. He considers the chief merit of his contrivance to consist of the open file, which is an instrument of his own invention, and by aid of which, a high perfection of finish can be easily attained.

#### IMPROVEMENTS IN THE MANUFACTURE OF GAS.

MESSRS. BARLOW & GORE, in England, have secured a patent for certain improvements, which they have made in the manufacture of gas, which are highly spoken of in the *London Mining Journal*. "The processes are based, first, upon an improved method of rendering luminous the gases, resulting from the perfect decomposition of water or steam ; and second, upon the conservative influence which hydrogen exercises in protecting the matter upon which the illuminating power of gas depends, from decomposition by heat."

We are not informed of the processes which are employed in securing these results, although we are told that the first point is gained by condensing the water gases, and then passing them through a heated retort containing carbonaceous matter, and afterwards, we are told, these gases are "admitted in regulated quantities into retorts, where carbonaceous matter is undergoing distillation or decomposition, and by which they are rendered highly luminous."

These patentees suppose that upwards of fifty per cent. may be added to the volume of gas yielded by all descriptions of materials ordinarily used for that purpose without any diminution of the illuminating power, so that 15,000 cubic feet will be the probable future product from one ton of Newcastle coal, and 75,000 cubic feet of London gas, from the same quantity of Boghead Cannel.

The discoveries here set forth may be of great importance, in view of the ordinary modes of manufacturing gas, and in this fact we have very satisfactory evidence of the value of any discovery like that which we described in our last number. Several letters and personal applications on the subject show that the public understand its importance, and are disposed to avail themselves of any real improvement in the mode of lighting their houses.

Taking this subject in connection with that of heating buildings, public and private, we have a very wide scope, and if successful, we do the public great good. We have lately seen some alleged discoveries in reference to this latter process, that seem quite promising, but we are not sufficiently familiar with the claim to make any statement on the subject. It will be published as soon as it is properly prepared, without doubt. Meanwhile, we advise all to take heed of all pretenders, and thoroughly investigate the subject, to see whether the alleged improvement is really such, and also whether it is the property of the claimant. We are inclined to think that large amounts have recently been thrown away upon claims that are utterly worthless.

## BREEDING CATTLE.

THE following judicious remarks in relation to the breeding and management of cattle, are taken from the *American-Herd-Book*, an able work, by Lewis F. Allen, Esq.:

"To such as intend to breed cattle of decided excellence—and they, we hope, constitute all—we recommend them to select bulls of only *moderate size*, coupled with all the *fineness* of bone and limb, consistent with a proper masculine vigor and energy, coupled with *fullness* of carcass, and ripeness of points, so as to embody great substance within small compass. In addition to this, let him be as deeply bred, that is, of as pure blood, and of as long ancestry, (not depending on the herd-book altogether for that, as many of the very best class of animals have comparatively short *herd-book* pedigrees,) as possible; and above all, let him be descended of good milking stock, when milkers are to be bred in his progeny. Your cows, we will presume, are such as your opportunities enable you to procure, but of approved blood. If the bull selected *breed well to your cows*, have no fears to continue his services to a second, or even a third generation of his own get. Such practice will produce uniformity, and uniformity is one great excellence. No matter for the color, so it be within the short-horn colors. Above all things avoid coarseness, looseness, flabbiness, and a general tendency in the animals to run their valuable points into offal. Such cattle, of whatever breed, are great consumers, bad handlers, light provers, tender of constitution, and unsatisfactory altogether. If you have an occasional production of this sort, transfer it to the shambles or elsewhere, with all dispatch. On the principle that "like begets like," which is an unerring law of nature in the long run, with the presence of such in your herd, you will be perpetually afflicted with the production of animals, which, by hereditary descent, sympathy, and the thousand accidents springing from association, will be neither creditable to your good breeding, nor satisfactory to yourself.

Feed well, not lavishly. Your cows should be in good breeding and milking condition, nothing more, and your bulls in fair working order. Such is the condition most consonant to nature, and productive of the highest animal health. The scale of points laid down in our introduction, with the occasional remarks on the practice of good breeders, as we have passed in our history, detail what a good animal should be. These, together with a close examination of the general figure of good cattle, as illustrated in our plates, will aid the judgment of the breeder. With a well-balanced judgment of his own, and a sound experience, they will be a safe guide, and he may go on his way rejoicing.

A single word to such, if any there be, into whose hands these pages may fall, as deride the value placed on superior cattle by their breeders, and such as know their real worth. Breeding *good* animals is a subject of great labor and incessant care. Such labor cannot be bestowed for nothing. To breed successfully, requires skill, talent, research, observation, and all of these of a high order. Let the breeding of our fine stock fall into unworthy hands, and hardly a single generation of man will pass before the real lover and promoter of the matchless herds which now so proudly embellish many of our rural estates—a source of pleasure, of pride, and of comfort to their possessors—will mourn their degeneracy, and which the time of another generation with great labor and constant solicitude would scarce suffice to reëstablish in their former splendor and excellence. Talent and labor of this kind cannot be had for nothing, and without remunerating prices be maintained, the downfall of the short-horns, in America, will sooner or later be at hand.



## CHINESE MAGIC MIRROR.

THE description of the metallic mirrors manufactured in China, given in the *Cosmos*, will be read with interest. A deal of attention, says the writer, has been given in Europe to certain metallic mirrors fabricated in China, in which, forms of letters, flowers, and animals are embossed on the back, which is not polished. On looking directly and as closely as possible on the polished face, no trace of these figures is seen; but if the mirror is made to reflect the rays of the sun upon a wall or screen, the ornaments on the back are plainly seen in the reflected light. Many attempts have been made to explain this phenomenon, but hitherto unsuccessfully. On the 1st of April, however, M. Biot exhibited to the Academy of Sciences, in Paris, one of these mirrors made by M. Lerebours. It appears that in 1847, MM. Arago and Biot suggested an explanation, founded on the fact that, as the embossing of the back surfaces gave different thicknesses, and therefore different resistances to the metal, when the face came to be polished, the surface opposite the raised portions would be more resistant, and would be raised in a convex form, while that opposite the hollow would, under the same pressure, be slightly concave—these effects being so slight as to be invisible to an ocular examination of the surface, but becoming manifest by the deviations impressed on the reflected rays. To test this theory, M. Lerebours took an ordinary daguerreotype plate of copper plated with silver, and on the copper back he engraved a crescent, and then polished the plate. Looking directly on it, and as carefully as possible, nothing is seen; but when the sun's rays were received on the plate and thrown on a screen, the form of the crescent was clearly defined on the reflected image, darker or lighter than the rest, according to the distance of the mirror from the screen.

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FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

## USEFUL PROBLEMS.

## TO FIND THE FLOW OF WATER THROUGH TUBES.

WHAT quantity of water will be discharged in twenty-four hours by a tunnel 5 feet clear in diameter, twenty-eight miles long, descending 18 inches in each mile, starting with a head of 12 inches above the top of the inside of the culvert?

Also, what quantity of water will be discharged in twenty-four hours by an iron pipe 30 inches clear in diameter, of the same length, and the same head and fall?

The first, I find, will discharge 20,649,600 gallons, and the second will discharge 3,650,400 gallons in twenty-four hours.

The calculations are made on the supposition that the tubes are perfectly straight and cylindrical, so as to cause no eddies, and permit no air to lodge in the upper parts of bends, which, if permitted, would materially diminish the discharge.

The formula used in the calculation is derived from experiments detailed in the *Edinburgh Encyclopædia*, art. "Hydrodynamics," and may be expressed thus:

Let  $d$  be the diameter of the culvert or tube;  $h$  the total head and fall of

water, or the height of the water in the reservoir above the middle of the lower end of the pipe;  $l$  the length of the pipe, all in inches; then the velocity in inches per second, with which the water will flow in the pipe, will be  $v = 23\frac{1}{3} \frac{\sqrt{57} h d}{l \times 57 d}$ , which, in the first case, by calculating, I find to be 23+ per second; and in the second case, 16.9 inches per second.

Now, 23+ inches per second will give 57,360 yards per day; and as it is known that a cylinder of water 1 inch in diameter and 10 yards long, is one gallon, it follows that each yard of the culvert, 60 inches diameter, contains 360 gallons; but  $360 \times 57,360 = 20,649,600$ , as before. In like manner, one yard of the 30-inch tube contains 90 gallons, and the velocity through this pipe of 16.9 inches per second, gives 40,560 yards per day, and this multiplied by 90, gives 3,650,400 gallons per day.

By a similar calculation, I find if a 60-inch tube, with a similar slope, is only thirteen miles long, the velocity of discharge will be 24.78 inches per second, and will therefore discharge in twenty-four hours 21,330,000 gallons. In like manner, it will be found that a tube of 20 inches diameter, and 4 miles long, with a head and fall of 100 feet, will discharge about one sixth more water than three tubes of 12 inches in diameter of the same length, with a similar head and fall.

TO FIND THE LENGTH OF AN ARC OF A CIRCLE CONTAINING ANY NUMBER OF DEGREES.

*Rule.*—Multiply the number of degrees in the given arc by 0.0087266, and that product by the diameter of the circle.

The decimal above is found by dividing the circumference of a circle whose diameter is 1, by 360 degrees; the quotient will be the length of the arc of one degree: that is,  $\frac{3.1416}{360} = 0.0087266 = \text{arc of one degree of a circle, whose diameter is 1.}$

*Example.*—What is the length of an arc of 10 degrees 15 minutes in a circle whose diameter is 68?

$$10^{\circ} 15' = 10.25 \times .0087266 \times 68 = 6.082396 = \text{Ans.}$$

ESTABAN.

#### PROFITS OF WOOL-GROWING.

Mr. McCORMIC, a wool-grower of Pennsylvania, communicates to the *Western Plough-Boy* his experience as to the profit of wool-growing. He says:

"I shall confine myself more particularly to my experience with a small flock of extra Saxon Marinoes, of 15 head, which I purchased of Mr. McCaever, of Washington county, Pa., for which I paid him \$125, in April, 1851. The 15 head sheared in June, 1851, 58 pounds of well-washed wool, for which I received 75c. per pound. That season I raised but 8 lambs, 10 of said ewes only were with lamb, the other 5 being but two years old.

In 1852, I had with the old stock and the 8 lambs, 23 head to shear; they sheared 86 pounds, for which I received but 60c. per pound—wool being lower than in 1851. I raised 12 lambs, and sold them in July for \$3 per head, thinking they could not stand the drive to this State. I sheared

said sheep about two weeks since; they sheared nearly four pounds average, some of them shearing as high as five pounds, and I have 14 lambs, worth \$3 per head.

I have not sold my wool, but I shall ship it to Licking county, O., where I expect to get 80c. per pound, wool being higher this year than for some years past, and no doubt will remain so for some years to come. Now, Sir, I will figure a little, and see if I have made any thing, after paying \$8 33½ cents per head for my sheep.

Cost of sheep April, 1851,	-	-	-	-	-	\$125 00
Expense of pasturing from April till June, 1851,	-	-	-	-	-	1 50
Received for 58 lbs. of wool, June, 1853,	-	-	-	-	-	43 50
Raised 8 lambs in the year 1851,	-	-	-	-	-	40 00
June, 1852, the 23 sheep sheared 86 lbs., at 60c. per lb.,	-	-	-	-	-	51 60
July, 1852, sold 12 lambs for	-	-	-	-	-	36 00
Cost of keeping from June 1851 to 1852,	-	-	-	-	-	32 00
June, 1853, sheep sheared 88 lbs. at 75c. per lb.,	-	-	-	-	-	66 00
This year have 14 lambs, at \$3 per head,	-	-	-	-	-	42 00
Cost of keeping from June 1852 to 1853,	-	-	-	-	-	34 00
The old stock still worth,	-	-	-	-	-	125 00

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403 00

Deduct cost and keeping, - - - - - 192 50

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Net profit from April, 1851, to June, 1853, on \$125, - - \$211 00

The expense of washing and shearing I have not calculated, it would not exceed, for the three shearings, \$10."

#### STOCK AND FARM PRODUCE OF THE CANADAS.

In a letter from W. L. Mackenzie, published in the Denville *Independent* we find the following in relation to the production of the two Canadas:

In all Upper Canada, there are 99,860 occupiers of land, of whom only 3,080 occupy above 200 acres; nearly 10,000,000 acres are then occupied, of which over two thirds are cultivated.

The crops of 1851 were, wheat, 12,692,862 bushels; oats, 11,193,844 bushels; Indian corn, 1,696,613 bushels; potatoes, 4,987,475 bushels; turnips, 3,644,942 bushels; hay, 681,782 tons; wool, 2,699,764 pounds; maple sugar, 3,581,505 pounds, &c.

Other products, &c., were butter, nearly 16,000,000 pounds; cheese, 2,226,746 pounds; beef, 817,646 barrels; pork, 528,129 barrels; fulled cloth, 527,466 yards.

There are in Upper Canada, 193,982 bulls, oxen, and steers; 296,024 milch cows; 254,988 calves and heifers; 203,300 horses; 968,822 sheep; 569,257 pigs.

Lower Canada has 94,449 occupiers of 8,113,915 acres of land, of which 3,605,517 are cultivated. The crop of wheat last year was only 3,075,868 bushels; of oats, 8,967,504 bushels; of potatoes, 4,456,111 bushels; of hay, nearly a million tons; nearly a million and a half pounds of wool; six million pounds of maple sugar; nearly ten million pounds butter; 223,870 barrels of pork, &c.

Lower Canada also manufactured 780,860,950 yards fulled cloth; 889,523 yards linen; 860,550 yards flannel.



## GERMAN AGRICULTURE.

EACH German has his house, his orchard, his road-side trees, so laden with fruit, that if he did not carefully prop up and tie together with wooden clamps, they would be torn asunder by their own weight. He has his corn-plot, his plot of mangold-wurtzel, or hay, or potatoes, or hemp, &c. He is his own master, and he, therefore, and every branch of his family, have the strongest motive for constant exertion. You see the effect of this in his industry and his economy.

In Germany, nothing is lost. The produce of the trees and the cows is carried to market; much fruit is dried for winter use. You see it lying in the sun to dry. You see strings of them hanging from their chamber-windows in the sun. The cows are kept up for the greater part of the year, and every green thing is collected for them. Every little nook, where the grass grows by the roadside and brook, is carefully cut with the sickle, and carried home on the heads of women and children, in baskets, or tied in large cloths. Nothing of any kind that can possibly be made of any use, is lost; weeds, nettles, nay, the very goose-grass which covers waste places is cut and taken to the cows. You see the little children standing in the streets of the villages, in the streams which generally run down them, busy washing these weeds, before they are given to the cattle.

They carefully collect the leaves of the marsh-grass, carefully cut their potato-tops for them, and even if other things fail, gather green leaves from the woodlands. One cannot help thinking continually of the enormous waste of such things in England, of the vast quantity of grass on banks, by roadsides, in the openings of plantations, in lanes, in church-yards, where grass from year to year springs and dies, but which, if carefully cut, would maintain many thousand cows for the poor.

To pursue still further this subject of German economy; the very cuttings of the vines are dried and preserved for winter fodder. The tops and refuse of hemp serve as bedding for the cows; nay even the rough stalks of the poppies, after the heads have been gathered for oil, are saved, and all these are converted into manure for the land. When these are not sufficient, the children are sent to the woods to gather moss; and all our readers, familiar with Germany, will remember to have seen them coming homeward with large bundles of this on their heads. In autumn, the falling leaves are gathered and stacked for the same purpose. The fir-cones, which with us lie and rot in the woods, are carefully collected, and sold for lighting fires.

In short, the economy and care of the German peasants are an example to all Europe. They have for years, nay, ages, been doing that, as it regards agricultural management, to which the British public is just now beginning to open its eyes. Time, also, is as carefully economized as every thing else. They are early risers, as may well be conceived, when the children, many of whom come from a considerable distance, are at school at six in the morning. As they tend their cattle or their swine, the knitting never ceases, and hence the quantities of stockings and other household things which they accumulate, are astonishing.

## EDITORS' JOTTINGS AND MECHANICAL RECORD.

**PHILADELPHIA, WILMINGTON, AND BALTIMORE RAILROAD.**—Since the issue of our November number, in which we noticed the increased travelling facilities furnished on the above road, we have received authentic information that arrangements are making by which the speed will be greatly increased, and the fare reduced, so as to place a trip to Washington from New-York, within every body's time and means. Indeed, at this time, the necessary arrangements are made with the Camden and Amboy Company, and are only awaiting the action of the Baltimore and Ohio Company, to be at once perfected, and announced to the public.

The Company propose to sell a through ticket from New-York to Baltimore, at *five dollars*, and a round trip ticket, giving the passenger about three days, for *eight dollars and fifty cents*. They also propose to sell a through ticket, from New-York to Washington, for *six dollars*, and a round trip ticket, giving the passenger from three to four days, for *ten dollars*! Arrangements are also making to have a line or train run from New-York to Washington, and vice versa, inside of *ten hours*! If these arrangements will not be combining economy with speed, we know not what will do it.

The Company have completed a track through the south part of Philadelphia to the Delaware river, by which the ferry-boats of the New-York line will run directly to the wharf with all through passengers, where cars will be in readiness to take them and their baggage to the Baltimore depot, corner Broad and Prime streets. This is a decided improvement upon the old plan of omnibus transit, which has so long been prevalent.

The Company are adding largely to their stock of cars and engines, and have fitted up a couple of cars expressly for night-travel. The seats are very easy, and inclined at such an angle as to support the head and feet of the passenger, and allow him to sleep almost as comfortably as he can in his own bed! These seats require more room in the cars than the old ones, as only about forty can be made in a space which usually holds sixty. We doubt not but that the traveling public will testify their appreciation of these facilities for their comfort, by an increase of patronage.

The new bridge across the Susquehanna, at Havre de Grace, will be commenced as soon as the surveys are completed. The Company propose to lay about twenty miles of double track in the course of the ensuing year, and to continue additions to it until the whole length of the road from Philadelphia to Baltimore, is furnished with as good facilities for safe and speedy traveling as any road in the Union.

The "administration" of President Felton has marked a new era in the history of this road. His efforts have been untiring for the promotion of the welfare of the passengers, and the Company have been peculiarly fortunate in the selection of a gentleman to preside over its affairs, whose ability and experience enable him to contribute so largely to the comfort and speedy transit of the passengers, and at the same time, increase the revenue of the road.

**FALL-RIVER LINE TO BOSTON.**—The travel over this line is immense, and the Company are obliged to build an additional boat to meet the increasing demands of the traveling public. A boat of huge dimensions is now on the stocks, and will be put upon the route during the coming season. Her length of deck is 345 feet; breadth of beam, 45 feet; beam over all, 82 feet; depth of hold, 15 feet; tonnage, 2,300; with 116 state-rooms, and sleeping accommodations, including state-rooms and berths, for one thousand passengers! The engine, which is in process of building at the Novelty Works, is 105-inch cylinder, with 12-feet stroke.

To one unacquainted with the amount of travel over this route, a boat of such dimensions and accommodations might seem superfluous; but we can assure the reader that it is none too large. We have seen over six hundred passengers

on the Bay State and Empire State, and that too when the Company was running the State of Maine between New-York and Newport, as a day-boat, to relieve the other two boats from the press of passengers at night. The Fall-River route is the most popular, having by far the finest boats, under the command of able and experienced captains, and must continue to be *the* route between New-York and Boston. The approach of cold weather does not affect, materially, the amount of travel, if we may judge from the numbers that were crowded on board the Bay State during a late trip. The route is preferable at all seasons of the year, the boats having been built expressly for running on the Sound. With such a gentlemanly agent as WILLIAM BORDEN, Esq., of New-York, the excellent accommodations which always characterize this route will be continued, to the gratification of the thousands and tens of thousands who testify to its preference over all others.

**FINE APPLE-JELLY.**—Take half a bushel of good pippin, bell-flower, or other fair sub-acid fruit, carefully cut out all blemishes, and without peeling or coring, quarter them, and throw them as they are cut into a pan of cold water, to preserve the color. When all the apples are thus prepared, take them out of the water, and without wiping or drying them, add to every pound of the fruit one pound of best loaf or crushed sugar. Put all together into a large preserving-kettle, with water barely sufficient to keep them from burning, and mix among them the rind of half a dozen lemons, cut into very small pieces, together with the juice of the same. Boil the mass as rapidly as possible, without burning, until the apples become perfectly soft or boiled to a mash; then put the whole into a jelly-bag, and if wanted for immediate use, run the liquid into moulds; but if intended for keeping, run it into jars in the usual manner. Jelly made by the above method, will be beautifully transparent and delicious to the taste, and presents to the connoisseur one of the richest delicacies of the season.

**GUANO.**—It is stated that there were at the Chincha Islands, on the 1st of August, loading with guano for the United States, 44 vessels, with an aggregate of 31,328 tons. There had sailed from the islands prior to August 1, and not yet arrived, 26 vessels, with 15,415 tons of guano on board. These vessels are all destined for the United States.

**HORTICULTURAL EXHIBITION.**—The annual exhibition of the Horticultural Society of Maryland commenced in Carroll Hall this morning, and will be continued on Thursday and Friday. The display is of the most extensive and attractive character, embracing many of the rarest and most choice specimens of Flora's favors, whilst the display of fruits is large, and the Floral designs unsurpassed. The efforts made by the members of the Society to present a collection, surpassing all similar exhibitions in the northern cities, should secure to them a liberal encouragement on the part of our citizens.—*Baltimore paper.*

**WHEAT-DRILL WITH A GUANO ATTACHMENT.**—We have seen a certificate of several gentlemen of the county of Clarke, Va., to the effect that Thomas F. Nelson, Esq., of said county, has invented a machine for sowing guano which can be easily attached to an ordinary drill, and that 42 lbs. per acre applied by this machine have produced as much effect as two hundred pounds would have produced if sown broadcast. This is a very important statement, especially if made after a fair comparison of the two modes *side by side*. No doubt the gentlemen who made it believed it fully, as they are persons of the highest respectability, and we do not gainsay it, but only call their attention to the necessity of a more precise statement than their certificate now gives. Mr. Nelson has applied for a patent.

**FERTILITY OF NILE MUD.**—The celebrated microscopic philosopher, Ehrenberg, has examined this mud, and finds its great fertility to be owing, not so much to any peculiar mineral contribution, or to the presence of vegetable matter, as it is to the vast accumulation of extremely minute forms of microscopic animals, which, by their decomposition, enrich the soil.